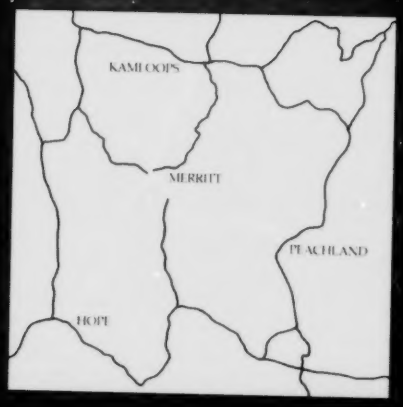
Report of the Commissioner Inquiry into the Coquihalla and Related Highway Projects



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Province of British Columbia

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Coquihalla and Related
Highway Projects

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December 21, 1987

TO HIS HONOUR THE LIEUTENANT-GOVERNOR IN COUNCIL

MAY IT PLEASE YOUR HONOUR,

Under Your Honour's Order-in-council 1546, approved and ordered July 31, 1987 as later amended, the undersigned was appointed a Commissioner to fulfill the terms of reference contained in the Order and to report on a number of issues relating to the estimated and actual costs of highways constructed in recent years in our Province.

I have complied with your Order and have the honour to submit herewith my report.

Respectfully,

D. L. MacKay

Douglas L. MacKay, P.Eng.
Inquiry Commissioner

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Acknowledgements

The Commission has been dependent on and has benefitted from the efforts, knowledge and dedication of many individuals. Throughout the Inquiry the work of the Commission has been greatly facilitated by the cooperation of the staff of the Ministry of Transportation and Highways, who provided detailed responses to specific questions and provided much of the information needed for the Commission's conclusions.

Submissions were received from many individuals and organizations and the Commission is grateful for the information, comments and recommendations contained in the submissions.

The Commission has been assisted throughout its work by counsel Mr. C.F. Murphy, Q.C. and Mr. G. Macintosh of the firm of Farris, Vaughan, Wills and Murphy; by Mr. D. Hooper, C.A. and Mr. H. Pankratz of the firm of Clarkson Gordon; by Mr. R. Tribe, P.Eng. of Tri-Man Consultants and by Mr. T. Stinson, P.Eng. who assisted in research of records and contracts. In addition the Commission received specific technical advice from Mr. B. Henkel of the Washington State Department of Highways.

The Commission has received throughout its work continuing support from its secretarial staff of Sherrie Ralph and Stephanie Lowe under the direction of Delayne Barnett. Preparation of the final report was aided by Windrim, Kleyn and Lim Creative, and excellent service was received from the Queen's Printer in printing the final report. The Commission records its thanks to staff of the Provincial Secretary who provided many essential support functions, and to all the staff, consultants and others who have assisted in this Inquiry.

Finally, the Commission wishes to acknowledge the dedicated and untiring support of the Commission Secretary, Mr. Irwin Henderson, without whose knowledge and help the Inquiry could not have completed its work, nor produced its report in the short period of four and one-half months.

Explanation of Text References

THE MINISTRY — refers to the Ministry of Transportation and Highways, previously the Department of Highways and Public Works, etc.

THE MINISTER — the Minister of Transportation and Highways, previously Minister of Highways and Public Works, etc.

The Hon. Alex Fraser filled these offices during the time the Coquihalla Highway construction began until October 1987

HANSARD — quotations are from B.C. Legislative Assembly, *Debates*, 33rd Session, 34th Session

TRANSCRIPT — quotations are from verbatim transcripts taken at Commission's hearings, Appendix B lists witnesses, dates, and locations of these

MINISTRY BRIEF — *Brief to Commissioner Inquiry Coquihalla and Related Highway Projects*, Ministry of Transportation and Highways, September 1987

HARVEY — *Ways Through the Mountains of British Columbia-1.The Coquihalla Route*, by R.G. Harvey, manuscript

MANTLE — "Functional Report for Proposed Divided Highway from Hope to Merritt", H.A. Mantle, P.Eng, Design & Surveys Branch, 3 Vols.

TRIBE — Report of Commission's Engineering advisor, Mr. Robert Tribe, P.Eng. — Appendix C

HOOPER — Report of Commission's accounting advisor, Mr. David Hooper, C.A. — Appendix E

VON MAYDELL — submission to Inquiry by Mr. V. von Maydell, P.Eng., September 31, 1987

INQUIRY/COMMISSION — are used interchangeably through this Report

Summary

Introduction

This Inquiry was established on July 31, 1987 under the *Inquiry Act*. The Order-in-council setting the terms of reference directs the Commission:

- to compare the estimates and costs of the Coquihalla Highway;
- to find the reasons and justification for differences between estimates and costs;
- to examine other recent highway projects where costs may have differed from estimates;
- to investigate the procedures for costing, administering, and reporting highway projects;
- to make recommendations.

The Inquiry has been conducted with the Commission's agenda being set by the need to discover the facts in a methodical way. Information has been received through public hearings, examination of written records, and interviews. The Ministry of Transportation and Highways, contracting companies, industry associations, trade unions and private individuals have all contributed. Experts in accounting, engineering, law, and project management have acted as advisors to the Commission. The Commission is grateful and acknowledges its debt to all participants.

In carrying out its work, the Commission came to appreciate the immensity of the task which faced the Ministry when the government ordered the Coquihalla Highway built in time for EXPO '86.

The Commission is well aware of the many practical challenges associated with major construction projects involving earth moving, bridge building and other work, of how these are multiplied by fast-tracking in difficult terrain and adverse weather, and of the complex decisions which need to be made each day with incomplete knowledge to bring these projects completion on time.

However, an Inquiry while acknowledging accomplishment must, by its very nature, dwell on negative aspects and must also make them public and report them. This has been done. The Commission also makes positive recommendations for estimating, project management, financial control, and reporting of major highway projects in the future.

Coquihalla Highway — Estimates and Costs

The Coquihalla Highway and its parts are shown in Chart 1. The section from Hope to Merritt, 112 kilometres, was opened in time for EXPO in May 1986. Merritt to Kamloops, a 70 kilometre freeway, was opened in September 1987. The section from Merritt to Peachland is still under design and construction.
The Commission has determined that the decisions to proceed with the Coquihalla Highway were based on the following published or publicly-stated estimates:

Statement of Estimates

Project	*Estimate*	*First Date Published*
Coquihalla — Hope to Merritt	$250[1] million	Nov. 10, 1978
— Accelerated construction	$250[1] million	Sept. 4, 1984
Coquihalla — Merritt to Kamloops	$125 million	Sept. 4, 1984
Coquihalla — Merritt to Peachland	$125 million	June 5, 1985
Coquihalla Ancillary projects	no published estimate	
Trans-Canada Highway Improvements	no published estimate	

[1] *Included in this estimate is the cost of rebuilding approximately 5 km from Hope to Nicolum Creek. See footnote to following Statement of Costs.*

Coquihalla Highway Hope to Merritt:

The $250 million estimate was based on a 1973 estimate of $60 million. This was a preliminary or reconnaissance estimate of construction costs only, for a four-lane, 60 m.p.h., rural highway with an eight-foot median. This estimate was updated to $250 million in 1979 and never reviewed in detail again.

Coquihalla — Merritt to Kamloops:

No documentary evidence gives technical support for the $125 million estimate.

Coquihalla — Merritt to Peachland:

No documentary evidence gives technical support for the $125 million estimate.

Determining these costs has not been easy. Costs are not uniformly recorded in any one place, and alterations in accounts have also needed to be reconciled. The Commission's conclusions as to the costs are set out in the Statement.

Statement of Costs

	Cost
Coquihalla — Hope (Nicolum Creek)[1] to Merritt	$414.7 million
Coquihalla — Merritt to Kamloops	$155.5 million[2]
Coquihalla — Merritt to Peachland	$268.7 million[2]
Coquihalla — unclassified	$ 4.9 million
— remedial work	$ 4.0 million
Total Coquihalla	$847.8 million
Coquihalla Ancillary[3] and Trans-Canada Highway Improvements[4]	$150.6 million
TOTAL	**$998.4 million**

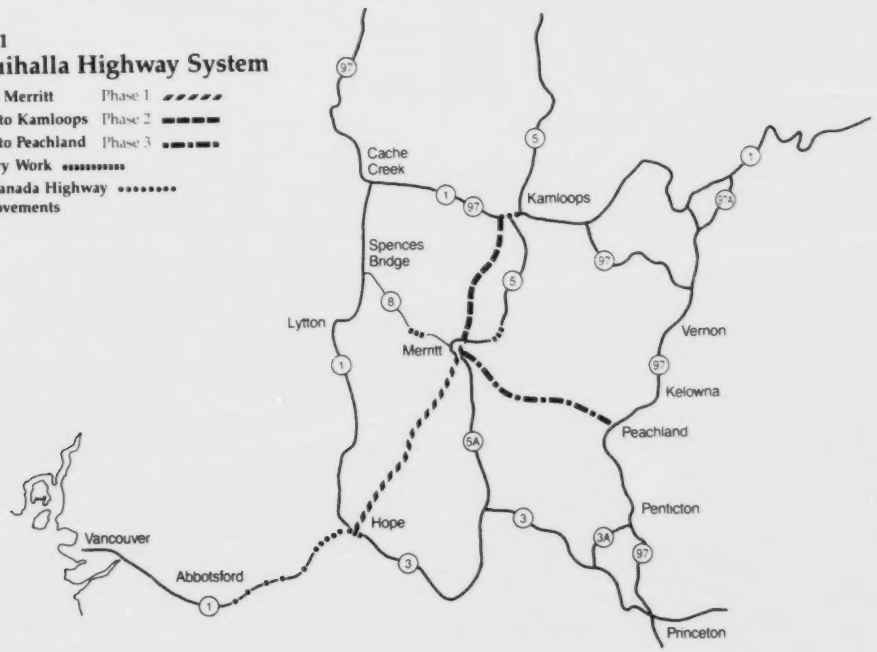
[1] *In 1985, the Ministry redefined Nicolum Creek as the southern end of the Coquihalla Highway, rather than Hope. This removed the $40 million cost of 5 km reconstruction from Hope to Nicolum Creek; this cost is included in Ancillary projects.*

[2] *Estimates from Ministry Brief, page 32. It is the Commission's opinion that the publicly estimated costs for Merritt to Peachland would have remained at $125 million but for the need to update them for the Inquiry.*

[3] *Coquihalla Ancillary projects were constructed 1984 -- 1986 on Highways 5 and 8 to carry traffic from Merritt and on Highway 3 to connect to the southern end of the Coquihalla.*

[4] *Trans-Canada Highway Improvement projects raised Highway 1 to freeway standard from Hope to Abbotsford and in the vicinity of Kamloops.*

Chart 1
Coquihalla Highway System



Reasons for the Differences

Overall, the difference between estimates and costs is due to the inadequate estimates. The Commission can only conclude that in each case the estimates were misleading, haphazard and based on no common foundation or systematically recorded data.

The discrepancy between estimates and costs is heightened because estimates were never updated to reflect either the additional costs of accelerated construction or the very large changes in scope. For Coquihalla Hope to Kamloops changes included higher design speeds, additional lanes and interchanges. The Ancillary and Trans-Canada Improvement projects have appeared and disappeared from the project definition. The map on page 11 shows the significant scope changes.

Annacis System

When this project was announced by the then Premier W.R. Bennett and the Minister of Transportation and Highways in February, 1980, the total estimated cost was published as $130 million. As far as the Commission can determine, this estimate was based on a consultant's preliminary report primarily concerned with traffic patterns and the main bridge, and which was totally inadequate for other parts of the project.

In the two years following the announcement, the Ministry and its consultants carried out detailed work which included negotiations with affected municipalities. As a result, the project scope was significantly enlarged to include necessary additional parts of the system. A map showing the additions is included on page 42.

In August 1982, after completing the designs for this additional work, the Ministry engineers re-estimated the project at $366 million and so reported to the Deputy Minister. The new estimate was not made public. Indeed, it was not until December 1983 that Treasury Board was officially advised of the new estimate when the Minister requested authorization to award the main bridge contract.

Further additions were made to the project as it became clear that completion of Marine Way in Burnaby was required to make the Annacis project "work". Similarly, the Richmond Freeway was a needed element. These additional projects would have been foreseen by an orderly highway planning system and should have been included in the initial estimates and project definition.

The Annacis system was authorized and begun on the basis of an initial public estimate of $130 million. Prior to the Ministry Brief to the Inquiry the largest public estimate was $360 million even though the Ministry now estimates that it will cost approximately $485 million upon its completion in 1988. No doubt it will cost at least that amount.

From this, the Commission can only conclude, that when the original decision was made, very little technical advice was available or sought, and the project was initiated with a disregard for the both facts and the consequences.

Northeast Coal Access Road

This project was originally estimated at $50 million as part of feasibility studies in 1976. This remained the Ministry's only documented cost estimate when in 1980 the provincial government signed an agreement with the two coal companies to provide infrastructure for the Northeast regional development.

When construction began in 1981, the estimate was $73 million. This was updated to $85 million in June 1981, and to $92 million in February 1982. When complete, the total project cost was $97.2 million.

Other Projects

The Commission has compiled a database of nearly 300 of the Ministry's capital construction contracts over $1 million since 1980 in order to review the estimates and costs of "normal" capital construction projects, and to investigate the procedures followed by the Ministry in administering and reporting on those

projects. There are three types of contracts: grade construction, bridge construction, and paving.

In compiling the database, it was learned that other projects are similar to the Coquihalla, Annacis and Northeast Coal projects: the Ministry has neither a formalized cost estimating procedure nor any systematic recording of estimating data. Estimates are made for individual contracts when they are put out for competitive bid, but their use is limited to comparison with tendered prices.

The Commission has found that the final payment on most contracts exceeds the tendered price. The greatest difference is found in the grade construction contracts. While changes in quantity are to be expected, these should be "plus-or-minus" adjustments over a narrow range, and for a large number of contracts should approach zero.

Contracts are reported in the Ministry's *Annual Report*. Because these are reported by Electoral Districts on an annual basis, it is difficult for the public to find the actual costs of any single contract or project.

Justification

The Commission cannot find justification for the circumstances above; it can only say in its opinion how this situation came about:

- The government has not demanded, as a prerequisite to embarking on major highway construction, sound and well-documented advice regarding need, scope, costs and system implications.
- The government system of funding and recording the cost of large highway projects does not require total project budgets to be in place or adhered to.
- The government budgetary and reporting systems cannot exercise effective control over multi-year highway capital projects.
- The Ministry has not developed a comprehensive approach to project estimating, budgeting and management of large multi-year highway projects. There is no explicit project control function.
- The current method of reporting highway capital spending — by individual contracts, by Electoral Districts, and on an annual basis — has served to disguise the true cost of major projects.
- The government and the Ministry have commenced highway capital works with low estimates and with inadequate consideration and publication of actual financial and physical requirements.

Financial Matters

In the fiscal year ending March 31, 1985, the first year of accelerated construction, no specific funding was voted by the Legislature for the Coquihalla Highway. Although the Legislature sat until May 16, more than two weeks after Cabinet's fast-track decision, and again for one day in September, the project was not discussed, nor funding sought. Rather, Cabinet passed Special Warrants of $120 million for the project in November 1984 and January 1985.

For 1985-86, Coquihalla and related projects were given an Economic Renewal sub-vote of $281 million, separate from the Ministry's operations budget. However, as soon as the fiscal year began, and while the Legislature was sitting, the Ministry advised Treasury Board that it would need more money. This first request was not approved, a list of supplementary projects was later considered by the Ministers of Highways, Finance and the Premier, assisted by their staffs. This lead to a supplementary program being approved in September 1985.

Treasury Board was aware that this involved spending money that was not authorized in the Estimates and invited the Ministry to apply for a Special Warrant later in the year.

The Ministry's subsequent request for a Special Warrant was approved by Treasury Board on January 8, 1986. However, this approval was not acted on, but rather, a new request was made on January 20 and approved on January 23. The difference between the two requests was the assignment of all of the Special Warrant

money to the regular Highway Operations expenses and none to Coquihalla and related projects. In conjunction with this, expenses were moved from Coquihalla and related projects to Highway Operations.

In this, the Legislature and public were deceived in two ways. First, by the transfer of $80 million expenses out of Coquihalla and related projects into Highway Operations. Second, a list entitled "Summary of 1985/86 Special Warrant Project Authorizations Highway Capital Construction" was tabled in the Legislature. This list, prepared by the Ministry, did not truly represent the projects on which money authorized by the Special Warrant had been spent.

The use of Special Warrants to fund highways expenditures also deprived the Legislature of its historical right to vote on the real estimates. Under the *Financial Administration Act*, Special Warrants are for use while the Legislature is not sitting and when ". . . a matter arises for which an expenditure not foreseen or provided for or insufficiently provided for is urgently and immediately required for the public good . . ." In both fiscal years the Legislature was in session at times that would have allowed it to have dealt with the required funding.

The Commission concludes that in the funding of the Coquihalla Highway Project:

- the Legislature was avoided and mislead by the documents presented to it,
- the true costs were not represented in a forthright way, but were manipulated by the transfer of expenses part-way through the project,
- these manipulations were directed as well as authorized by those in political authority,
- their execution was arranged by senior staff, who could not have been unaware of their purpose.

Allowing the Ministry to begin work without either a vote from the Legislature or a Special Warrant in place, meant that the Coquihalla project was not given a clearly-defined budget. This established the conditions in which cost increases could occur without accountability. Had there been such a project budget set in advance, and had there been timely and accurate reporting of costs, the Commission doubts whether funds would have continued to be authorized and the highway constructed throughout to its present standard.

The Commission's terms of reference directed it to inquire into estimates and costs and into the Ministry's practices and procedures in administering and reporting projects. This it has done and is satisfied that the reporting irregularities did not originate within the Ministry of Transportation and Highways. To go further in particularizing exactly who made the decision and when is beyond the mandate of the inquiry.

A financial investigation was carried out by the Commission's accounting expert into 15 selected contracts on the Coquihalla and other recent projects. His detailed review compared the Ministry's financial records with those of the contracting companies. This revealed:

- the Ministry's records were corroborated in all important respects,
- there was no evidence of excess payments made to contractors,
- the prices bid and the profits made by the contractors were not excessive.

Cost Control, Contracting and Reporting

The Commission believes that it is essential that public spending be, and be seen to be, both cost-effective and fully accountable.

The Ministry's chief method of cost control on the Coquihalla and Annacis projects, as with all its contracted work, was the process of public tendering. When based on adequate design and contract specifications, the open bidding process is the means by which public money is best spent, and seen to be best spent, in the most cost-effective way.

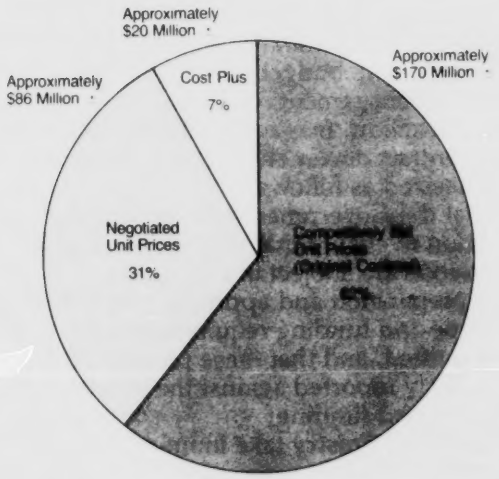
However, for the Coquihalla project, the fast-tracked schedule meant that detailed design was not adequate to describe the work to be done. This meant that the unit price contracts could not adequately

specify the work. The Inquiry's research is given in Chart 1, which shows that for the Coquihalla Highway Hope – Merritt contracts, sixty per cent of the total spent was the subject of competitive bidding; the remainder was later added to the contracts on a cost-plus basis or through negotiation with the contractors.

If these large amounts of work are added to contracts, then the validity of the tendering process is lost and the contract is an illusion — it becomes merely the basis of negotiations.

It is the Commission's view that for the grade construction contracts on the Coquihalla Highway from Hope to Merritt, the tendering process was used simply to select a contractor. Once on the site, the Ministry dealt with the contractor, effectively but by negotiation, to get the work done.

Chart 2
Coquihalla Highway System
Hope to Merritt — Prices Bid, Negotiated and Cost-Plus.



Note: These figures include the work tendered under grade construction, bridge and paving contracts. Not included is spending on other contracts (e.g., electrical, landscaping), day labour, and materials supplied by the Ministry.

A timely and accurate cost-reporting mechanism is essential for accountability. The Coquihalla project had none. Inaccurate estimates were publicly defended; misleading documents were published; and the specific contracts were reported more than twelve months in arrears making it difficult to determine the overall cost.

A cost-reporting system is also an essential ingredient of cost control. For the Coquihalla project, the Ministry's internal reporting had the purpose of annual cash-flow management, not project management. No effort appears to have been made to monitor or report costs against a project budget figure.

For the Annacis project, although the original estimate was grossly deficient and later, more realistic, estimates were never published, the Commission has found that the internally reported project costs were both accurate and timely. In this, the Ministry's normal practice was not followed. Throughout the Annacis project the Engineering Co-ordinator, Mr. B.R. McKeown, together with colleagues in the Ministry's Bridge Branch, kept records of all costs and changes, and set up an informal cost monitoring system. Although this resulted in responsible internal reporting it did not lead to proper public reporting.

The Great Bear Snowshed

This project has been the subject of discussion and controversy and was referred to in several of the submissions received by the Commission, although this was not the Coquihalla contract with the largest percentage or actual dollar over-run. Accordingly, a full review of this contract was undertaken.

The information gathered by the Inquiry through interviews and a review of the Ministry's and contractor's accounts shows that there was significant work on the project beyond the tender amount and that there were some irregularities on the part of Ministry staff in authorizing individual progress payments. However, by the time the accounts were finally settled, the

Commission is satisfied that all invoices were properly scrutinized and payments were made only for work actually done on the project.

The Commission concluded that construction of the Great Bear Snow Shed illustrates many of the deficiencies and added costs which resulted from the Ministry's lack of effective project management procedures. An overall schedule would have helped to ensure that the Ministry's Construction Branch had the site ready on time for the Bridge Branch. A project manager would have been able to recognize and resolve the Bridge Branch's inadequacies and difficulties in handling the contractor at an early stage. The lack of financial input to the project organization meant that inappropriate, if not illegal, ways of paying contractors were employed. Both inadequate coordination and lack of initial planning meant that, while the project construction started in the summer of 1985, the designs did not use the knowledge which was available from the previous year's work at the site.

Cost of Fast-Tracking

The cost of fast-tracking construction of the Coquihalla Highway is a matter of opinion. Certain of the costs are definite but most are not subject to explicit after-the-fact determination. Evidence was presented by the Ministry to show this cost in the range $12 million to $15 million. Mr. R. Tribe, the Commission's engineering advisor, gave his opinion in evidence that the cost was in the range of $40 million. He further made the point that if there had been a proper budgeting and decision-making process, both the cost of fast-tracking would have been part of the budget and part of the decision to fast-track, and the cost of fast-tracking could itself have been reduced.

Conclusions

The Commission has arrived at numerous conclusions to do with contract administration and financial estimates, costs, project management, matters which are contained throughout the full report. The most important of these are:

- The differences between costs and estimates of the Coquihalla Highway and the Annacis system are due to:
  - — inadequate and incomplete estimates with no serious consideration of scope;
  - — lack of control over major changes in scope after the projects were committed;
  - — lack of proper budgeting, monitoring cost-control and reporting systems.

The root causes are both the failure of the government to demand such things and failure of the Ministry to provide them.

- The Commission can find no justification for such failures.
- In regard to financial matters, based on the facts, the Commission observes that in the matter of the Coquihalla Highway, the legislature lost effective control of the public purse.

Recommendations

The report contains recommendations for changes in standards and procedures for estimating, budgeting, cost control, project management, contract administration, management organization and contract documentation but all can be synthesized as follows:

- That the Government take immediate action to ensure that all highway capital projects are subject to a formal process of preparation and approval, that overall scope and funding requirements are identified, and that these projects are publicly reported against the identified scope and funding;
- That the Ministry take immediate action to strengthen its estimating, budgeting, cost control, cost reporting and contract administration procedures for all capital work and implement a project management system in support of this.
- That the provisions of the Financial Administration Act be reviewed in the

light of this project, and their application to future projects be clarified and followed in future.

Making positive and constructive changes in a large and mature organization can be a difficult task. There is a human resistance to change and a fear of the unknown. The Ministry has had a reputation for high morale; it has "gotten things done;" it has a record of accomplishment which is publicly visible everywhere in the Province.

The Commission believes that the process of change must build upon these positive strengths in a planned and methodical way. The benefits of change need to be shown. Uncertainty must be minimized. Respect for the individuals must never be lost. Government's desire to do things differently must be assured. The clear objective must be to build an organization serving the needs of government and the people of the Province, now and in the future.

Recommendations

Recommendations flowing from the work of the Inquiry are in seven parts.

I Major Capital Project Development
II Capital Project Administration
III Estimates
IV Cost Reporting
V Management
VI Financial Reporting
VII Other Matters: Projects in Progress

The Commission is of the opinion that it is neither necessary nor desirable that recommendations for improvement stemming from the Inquiry spell out in great detail exactly how things should be done. Rather, recommendations should be directional and not prescriptive. However, these recommended improvements should be more than adequate to remedy the specific problems that arose with the Coquihalla project.

Reasons for the recommendations and the recommendations themselves are as follows:

I *Major Capital Project Development*

Evidence throughout the Inquiry is to the effect that short-term and long-term planning is done only to satisfy the requirements of the annual estimates, or to develop a 5-year listing of projects with order-of-magnitude costs. A more business-like process needs to be developed and implemented. A document should be developed that identifies major capital projects in an objective way listed in order of technical need over a period of at least 10 years. This document should contain realistic estimates of costs, identified as to the level of uncertainty. It should also describe the work in detail commensurate with the estimated cost along with a description of the need which it is designed to fulfill. The document should also describe how the project fits in to the overall framework of provincial transportation planning.

With such a document in hand, government can consider other factors such as social, environmental, economic and political requirements in order to develop and publish a rational highway capital planning document. Recognizing the need for careful control of government expenditure, such a multi-year capital planning document can be a useful tool in planning, priorizing, and adjusting annual spending levels.

Evidence is that major capital projects are almost invariably started without adequate consideration of scope or estimated total cost. As major capital projects (arbitrarily defined here as projects in excess of $50 million) are identified in the long-term capital plan, they should be subject to a separate report or a series of reports to move the projects in a systematic way through an approval process from concept planning through to approval for construction.

The early concept and planning process could be internal to and established by the Ministry, subject to annual expenditure allocations. But government should establish the final stages of the approval process which needs to include involvement of other affected parts of government. In this it may also be worthwhile to include non-government or "outside" individuals or organizations for at least some major projects, depending on the issues they raise. The Commission,

while not making specific recommendations in this regard, suggests government may wish to consider this.

The Commission recognizes the requirements which emerge from time to time, and for a variety of reasons, for major projects to be announced at the conceptual level. This requirement should be provided for in the approval process. It can be accommodated by limiting preliminary expenditure approvals to those necessary to move the project through the approval process. Final approvals must not be given until all of the necessary requirements about scope, estimate of cost and budget have been met.

Recommendations

- That the Ministry develop and systematically update short- and long-term capital plans to a greater level of detail and accuracy of cost estimation than now exist.
- That projects in the capital plans be properly defined as to the overall functional scope necessary to accomplish their intended purpose.
- That the long-term plans separately identify and report major capital projects (in excess of $50 million).
- That the government develop a system to establish priority of major highway capital works within the context of overall provincial transportation planning.
- That government develop an explicit approval process for major capital highway projects.
- That the approval process for major projects require a statement of functional scope, a total project estimate of the most probable final cost, a project schedule with annual budget requirements and evidence of proper planning.
- That in the event a major capital highway project must be announced at a conceptual level of development, government ensure that expenditure authorizations be limited to interim amounts sufficient to develop project planning to a level such that proper estimation of cost and definition of scope can be made, and with the approval of construction subject to the process recommended above.

II *Capital Project Administration*

The Commission heard evidence from the Project Management Institute and from the Ministry itself, in addition to Mr. Tribe's evidence and report, all in respect to the necessity for implementation of formal project management practices. There is no doubt that the implementation of the well-established principles of project management will save taxpayers money. This cannot be an interim or part-time part of Ministry capital works management else it will fail. It must be demanded by government and its on-going application must be assured.

In the Commission's opinion, outside advice should be obtained at an early stage to bring the requisite skill, knowledge and ability to manage a large capital expenditure program into the Ministry. These skills and knowledge must be made available to the Ministry, learned by the Ministry staff, and followed through by those responsible for the program. The skills and knowledge of project management are different from those of construction management which the Ministry is well acquainted with.

An integral part of a new approach to capital project administration is a complete review and rewriting of the Ministry's contract document along with a review and revision of its method of determining Unit Price contract bid items. These reviews, combined with the appropriate management skills, will result in more effective contracting strategies for capital works.

Also needed is a procedure manual for contract administration, so that the documents can be administered universally within the written terms of the contract. A further requirement is a training program for personnel involved in

direct contract administration so that they understand the documents and procedures and use proper and approved procedures throughout.

The Commission also heard evidence from Mr. J. Ferguson about Value Engineering and how the implementation of the concepts and principles of Value Engineering will result in lower costs for projects. While the Commission is not making a direct recommendation about the implementation of Value Engineering, it would be worthwhile for the Ministry, as part of its overall capital program planning and implementation, to investigate how and to what level Value Engineering can be applied to the Ministry projects.

Recommendations

- That the Ministry adopt proven project management practices for major capital projects not limited to but including:
  - — a single project manager reporting to a high level in the organization
  - — full-time support organization
  - — documented delegation of authority and establishment of policies and procedures that allow the project manager to operate effectively within the approved limits of the project
  - — establishment of a project control group within the Ministry reporting to a high level to forecast the position of the project to the executive and to ensure the project reports and conducts its affairs within the established policies and procedures.
- That the Ministry undertake a complete review of its contract documents for capital works, with the objective of developing a modern document (Specification and General Conditions of Contract) which is fair to government and contractor, appropriately shares risk between government and contractor, and which can be universally administered within the written terms of the contract.
- That the Ministry undertake a review of its methods of determining Unit Price Contract bid items and bid item estimated quantities, with the objective of establishing items and estimated quantities more representative of actual items and quantities.
- That the Ministry develop a procedure manual for contract administration.
- That the Ministry develop and implement at an early date, training programs for personnel involved in contract administration.
- That the Ministry, as part of its review and rewriting of contract documents, conduct a survey of practice in other jurisdictions and private industry to ensure that the final documents and procedures fully address all requirements.

III *Estimates*

The evidence is clear that the Ministry's estimating procedures are inadequate. Decisions involving the implementation of capital works are dependent to a large extent on evidence of projected cost. A proper estimate requires good information of past costs of similar projects, standard procedures, careful documentation, and clear quantification of accuracy and degree of uncertainty.

The evidence is also clear that in the past, publication of estimates has been a random procedure giving no true reflection of scope or costs, and with no clear identification of responsibility.

Recommendations

- That the Ministry develop standard procedures for estimating cost of capital works which replace single value estimates with carefully documented estimates providing specifically for uncertainty and quantified as to their probable accuracy.

- That the Ministry develop a data base or data bases of previous projects for use in estimating cost of capital works. Of greatest importance are the grade construction contracts.
- That the Ministry develop procedures for systematically updating cost estimates which take into account refinements in project scope and current cost information.
- That the Ministry develop a procedure for publication of estimates of cost of capital works which ensures clear responsibility for the estimate.

IV *Cost Reporting*

The Ministry's cost reporting system for capital works is fragmented and inconsistent. A system needs to be developed that gives timely and accurate information for management control and that reports overall costs against budgets for accountability.

Recommendation

- That the Ministry develop a comprehensive capital cost management system to give timely and accurate information reporting both the total and annual costs of all capital works against estimated costs.

V *Management*

Long-term success depends on competent individuals placed in an effective organizational structure and operating according to clear and efficient management procedures. The Ministry has grown and its responsibilities have expanded over the years. Senior management, for capital works, has by-and-large consisted of long-service employees experienced with existing procedures. This is changing and the Commission heard evidence that an overall review and revisions are planned.

Both the management process and structure of the Ministry should be carefully reviewed and strengthened.

Recommendations

- That the Ministry establish a task force managed by the Deputy Minister with appropriate external assistance to undertake a review of its overall management process and structure not limited to but with particular reference to:
  - — definition and documentation of departments, divisions and branches along with their roles
  - — co-ordination at all levels
  - — personnel practices
    - — succession planning
    - — management training
    - — performance appraisal
    - — indentification of management potential
  - — management information and reporting systems
  - — policies and procedures
  - — decision-making and approval procedures
  - — manpower requirements, in particular, support for the Deputy's position
  - — requirements and process for the functions of Internal Audit and operational review
  - — senior management remuneration.

A report on this review to be completed within 6 months.

VI *Financial Reporting*

A large amount of the Commission's work was involved with the investigation of the approval and final reporting of capital works. When capital works are approved for construction there should be no doubt as to what is included in the approval. When capital works are reported, the report should be in such a form that it can be clearly seen what was approved and what was actually accomplished.

Recommendations

- That in approval of expenditures for major capital works, votes and sub-votes in the Estimates be structured so as to adequately describe the work to be done and that later financial reports describe fully what has happened on a project basis.
- That all other capital work be reported on a project basis, equally completely, in the Ministry's *Annual Reports*.

VIII *Other Matters: Projects in Progress*

The work of the Ministry in planning and implementing capital works continues. And so it should. There is no reason why changes and improvements in practices, procedures and organization should interrupt necessary work.

However, a major project now under way, the Coquihalla Highway — Merritt to the Okanagan, still does not have a documented estimate, schedule and scope. Such a document should be prepared and decisions reviewed before the coming construction period in 1988.

Recommendation

- That the need, scope, estimate of cost, and schedule of the Coquihalla Highway — Merritt to the Okanagan be reviewed and a report, fully documenting these items, be prepared for submission to government by March 1988.

CHAPTER 1

Introduction

Terms of Reference

The cost of the Coquihalla Highway has been a matter of discussion and some controversy since the decision to build the project was announced in 1977. News stories during the years 1977-79 questioned the estimated cost of $250 million. In the fall of 1985, and again in June and July 1987, questions were asked in the Legislature.

The provincial government's Order-in-council 1546 of July 31, 1987 appointed the Commissioner, set out the terms of reference, provided a reporting date of September 30, and empowered the Commissioner to hire staff and conduct hearings. The Commission was granted the powers of a Judge of the Supreme Court as provided in the Inquiry Act. The terms of reference are set out in detail in Appendix A of this Report.

Review Procedures

The Commission set about its work to develop a factual information base to address the terms of reference. The following chapters describe how the work was carried out, present the information obtained, and set out the conclusions and recommendations.

As the work of the Commission progressed, the scope and complexity of the questions to be answered increased. From the initial technical review of the Ministry's engineering and accounting, the Inquiry's procedures and research had to be extended into such areas as the methods of financial control, project authorizations, and the information exchange between officials and elected representatives.

All these questions lay in the future as the Commission began its work.

Organization and Staffing

The Commission began on August 3, 1987, by interviewing the Deputy Minister of Transportation and Highways and giving him a comprehensive Information Request of seventeen items. The Commission Secretary, Mr. Irwin Henderson, had been assigned on July 31, 1987. He immediately took in hand arrangements for administrative and office accommodation and added clerical support. A research engineer, Mr. Tim Stinson, P.Eng., was employed, and the Commission proceeded immediately to retain counsel and select accounting and engineering experts.

An advertisement published the terms of reference and gave notice that public hearings would be held in Kamloops, Victoria and Vancouver. This was placed in newspapers in those cities on August 10, 1987, and was later included in the B.C. Gazette.

The firm of Farris, Vaughan, Wills and Murphy was retained as Commission Counsel and the Commission has been represented throughout by Mr. C. Francis Murphy, Q.C. and Mr. George K. Macintosh of that firm.

The firm of Clarkson Gordon, Chartered Accountants, was retained as investigative accounting experts and as advisors on management systems and organization. The accounting work has been carried out

under the direction of Mr. David Hooper, C.A., and Mr. Henry J. Pankratz, C.A. has advised the Commission on the subjects of organization and management.

Mr. Robert Tribe, P. Eng., of Tri-Man Consultants was retained to provide expert engineering advice to the Commission in the areas of estimating, management and cost control of capital projects. In addition, Mr. Brian Henkle, P. Eng. of the Washington State Department of Transportation — Manager of the Washington State I-90 project, who has wide-ranging and extensive experience with highway construction throughout the State of Washington, was retained to provide specific advice to the Commission on the Coquihalla Hope-Kamloops highway project.

Engineering Review

In August and September 1987, the Commissioner and Commission staff toured the Coquihalla project in company with staff from the Ministry who explained the relevant history and were available to answer questions. In addition, the Commission's engineering consultants, Mr. Robert Tribe and Mr. Brian Henkle, made a tour with Mr. Norm Zapf, the Ministry's Director of Construction, and others who pointed out various features of the system and some areas where problems had been encountered in construction.

Interviews were held with a number of engineering consultants and contracting companies who had worked for the Ministry on the design and construction of the Coquihalla project.

The research engineer compiled a computerized database on approximately 300 Ministry contracts over $1 million carried out since 1980. This provided the historical and overview data for use in assessing the Ministry's contracting practices and procedures. The reports of the Commission's project management and research engineering consultant are given in Appendices C and D.

Accounting Review

A team of three accountants under the direction of Mr. David Hooper examined the Ministry's records and financial systems in general terms and selected 15 Ministry contracts for a more detailed review. Figure 1 shows the locations of these contracts: 7 contracts were for work on the Coquihalla and related projects, 2 for the Northeast Coal access road, and 6 were for other work. Taken together, these 15 contracts represented over $180 million in final payments to the contractors. Appendix E gives the investigative accountant's report to the Commission.

This review was not a financial audit, but rather had the wider purpose of identifying and understanding the reasons for contract 'overruns'. Thus, not only were the Ministry's financial records studied, but the review also encompassed the files of the Ministry's Engineering Division relating to the 15 contracts. This information was then compared with the financial records in the offices of each of the contracting companies.

The accountants also examined financial and engineering records related to specific issues which were brought to the Commission and which were within its terms of reference. These included investigations of allegations made by participants in the Inquiry's public hearings, a review of material provided by the Royal Canadian Mounted Police, and of material sent to the Commission in correspondence. Carrying out these investigations entailed an examination of some further Ministry practices and procedures on Coquihalla contracts, as well as on other work.

Public Hearings

Notice was given of local hearings to receive information from members of the public. These were held in Kamloops August 31, Vancouver September 1, and Victoria September 14, 1987.

Fig. 1
Financial Review
— Location of Contracts

15 SELECTED CONTRACTS

1 Island Highway — 19
2 Garibaldi Highway
3 Annacis System
4 Annacis System Queensborough
5 Lougheed Highway
6 Floods–Hope
7 Hope–Nicolum Creek
8 Ladner Creek Bridge
9 Box Canyon–Great Bear
10 Great Bear Snow Shed
11 Great Bear No. 5–Summit
12 Mine Creek–Juliet Creek
13 Revelstoke–Mica
14 Bull Moose–Tumbler Ridge West
15 Bull Moose–Tumbler Ridge East

In opening the first day's hearings, the Commissioner stated:

> ". . . these hearings are being held to provide the public, and any member of the public who has information relating to the terms of reference, with an opportunity to give the Inquiry the facts and their opinions. As such, these are information hearings, and they are not adversarial, and they are not accusative ones."
>
> [Transcript p. 7]

The Commissioner also cautioned participants:

> ". . . I would also ask that if anyone has it in mind here to make any statement containing allegations of impropriety on the part of a third party, that they speak in advance with the Commission Counsel in order to ensure that their information is presented in a way which is fair to any such third party, who may not be present at these hearings, and cannot respond."
>
> [Transcript p. 7, 8]

The Commission also sought input at the public hearings from organizations associated with the roadbuilding industry. The hearings gave these groups an opportunity to make common representation on areas of interest and concern, while preserving the anonymity of individual members who believed that adverse comments might prejudice their future relations with the Ministry. The briefs presented by the Roadbuilders Association, three Trade Unions active in the roadbuilding industry, the B.C. Contractors Association, the B.C. Government Employees' Union, the Project Management and Planning Institutes of B.C. were all relevant to the terms of reference and brought community resources and views to the Commission's work. A complete listing of the participants and their submissions is given in Appendix B.

A transcript was taken of all the public hearings and copies were made available to any members of the public wishing to study them. Similarly, the briefs and documents tabled with the Inquiry and forming part of its record were maintained for viewing in the Commission's offices.

The Ministry requested the opportunity to prepare a detailed brief, laying out in a systematic way the information relating to the Inquiry's terms of reference. The Inquiry's hearing in Victoria on September 4 was rescheduled to September 14, 1987, to receive this presentation.

Examination of Documents and Witnesses

In conducting the Inquiry, it was necessary for the Commission's substantial conclusions to rest on evidence determined in the public forum. The Commission placed great importance on two requirements — fairness and efficiency — which led to the adoption of the Inquiry's procedures.

For each topic, this began with a review of the documents. The great majority of these were supplied by the Ministry in response to 50 Information Requests. Appendix G lists the documents supplied in response to these requests.

Once the documents had been reviewed, discussions then occurred between Inquiry staff and knowledgeable individuals. These took place in a variety of ways suitable to the fair and efficient gathering of information, ranging from brief telephone calls and consultations to formal meetings with prepared agendas and counsel in attendance. In some cases verbatim transcripts were taken.

From this stage, the documentary database was further developed, issues were brought into focus and, if necessary, contact was made with additional individuals whose knowledge or experience had been brought within the scope of the Inquiry.

Only after these steps had been taken were decisions made on the material it was necessary to bring to the public hearing process — either as documentary evidence

entered as Exhibits or as sworn testimony from witnesses.

In establishing these procedures, the Commisssion was aware of similar procedures developed by The Hon. G. E. Tritschler, retired Chief Justice of the Manitoba Court of Queen's Bench, for the conduct of the Commission of Inquiry into Manitoba Hydro and the excellent advice published in the *Handbook on the Conduct of Public Inquiries in Canada* by Russell J. Anthony and Alistair R. Lucas.

The Commission was advised throughout by its counsel regarding all legal and procedural issues.

The Question of Privilege

At the October 20, 1987 hearings, when the Inquiry concluded its evidence from Ministry staff, the Commission needed further evidence in order to fulfill its terms of reference in regard to costs and the reporting of costs. In particular, evidence was needed on the origin and purpose of certain financial transactions in early 1986, which affected the costs and reporting of costs of the Coquihalla Highway.

Therefore, following its usual procedure, the Inquiry staff held further interviews with former staff of Treasury Board and former political appointees and elected officials. Aware that this might raise the question of Cabinet privilege, the Commission welcomed in these discussions counsel for the Ministry of Highways and the Ministry of the Attorney General who ensured that no breach of confidentiality or privilege occurred in either the documents examined or the evidence taken.

Other Submissions

In addition to the information presented to the Inquiry's public hearings, the Commission provided an opportunity for an independent review of a number of issues affecting the Ministry. Some of these had earlier been raised with the Ministry, some had been passed to the R.C.M.P., and some emerged during the Inquiry's work.

Two of these dealt with the relations between the Ministry and sub-contractors on the Coquihalla project. One of these is presently the subject of a lawsuit in the Courts. In the other case, Commission staff were able to assist in mediating between the Ministry and the concerned sub-contractor.

The Commission also received a private brief from a local contractor who believed that his bids were not receiving a fair evaluation. He further believed that an earlier Ministry investigation of his complaint had not been properly concluded. Commission accounting staff investigated and found only one instance where the Ministry had not taken the lowest bid and determined in the end that there was no foundation to the complaint made by the contractor.

The Commission also received a number of letters which raised items of concern regarding the Ministry's projects or practices. These were researched, discussed with appropriate Ministry staff, and handled accordingly.

Finally, throughout its life, the Commission received letters offering assistance from a variety of engineering, accounting and other professionals. A number of these approaches led to fruitful interviews with Commission staff on matters within the terms of reference.

CHAPTER 2

Coquihalla Highway — History, Estimates and Costs

Early Surveys and Use of the Corridor

The Coquihalla Valley has a long history as a transportation route through the Cascade Mountains. First came the fur brigades, followed by the Kettle Valley railroad, the Transmountain oil pipeline, the Westcoast Transmission gas pipeline and finally, the Coquihalla Highway.

In 1963, the Department of Highways identified a potential highway corridor through the Coldwater and Coquihalla Valleys from Merritt to Hope. In 1966, a map reserve was placed on land, but the location was not confirmed until 1973, in a report entitled "The Proposed Divided Highway from Hope to Merritt." This report, by a Ministry employee, H.A. Mantle, P.Eng., set out a preliminary alignment and was the basis for an estimate of cost of approximately $60 million.

This early work was undertaken because traffic volumes to the Interior were rising steadily on both the Trans-Canada and the Hope-Princeton Highways, with forecasts of severe congestion in the mid 1980s. Four-laning of the Trans-Canada Highway in the Fraser Canyon was known to present severe difficulties and, as a result, the planners were looking for a new route between Hope and Kamloops. The most obvious one was the route using the Coquihalla and Coldwater River valleys.

During the 1970s the Ministry studied other options for routes to accommodate the expected traffic increases. These studies included a further evaluation of the Coquihalla corridor and confirmed the Coquihalla as the preferred alternative for additional highway access to the Interior.

A manuscript by Mr. R.G. Harvey, formerly Deputy Minister of Highways who retired in 1983, was made available to the Commission and it gives an excellent account of developments in the Coquihalla corridor throughout its history. This manuscript also describes in text and photographs the challenges associated with the construction of the Coquihalla Highway, from Hope to Merritt in the period 1984-1986.

Decision to Build — 1977

The Throne Speech delivered at the opening of the Legislature on January 13, 1977 announced the government's intention to build the Coquihalla Highway with the following statement:

> "In the long run, however, I am advised a new route is needed from the interior to the coast. The last major new highway route to the coast in the southern part of the province was the Hope-Princeton Highway, which was completed 28 years ago, in 1949. For these reasons, my government has directed my Minister of Highways and Public Works to proceed as soon as possible with the design and construction of a highway from Merritt to Hope through the Coquihalla Pass. This will require the construction of 70 miles of new highway."
>
> [Hansard, p. 5]

Subsequently on February 4th, 1977 the Honourable Alex Fraser, Minister of Highways and Public Works elaborated on

the announcement and described the route as follows:

> "Just a note or two about the Coquihalla, which was announced in the speech. This new route that was announced in the throne speech commences on the Hope-Princeton Highway about four miles east of Hope and follows the Coquihalla River to the old Portia siding on the Kettle Valley. At this point the alignment leaves the Coquihalla River and follows Boston Bar Creek to its headwater. From the summit the route drops to the Coquihalla Lakes, then follows the Coldwater River Valley to Merritt. The saving in distance between Vancouver and Kamloops amounts to 40 miles."
>
> [Hansard, p. 649]

In the following years the Ministry proceeded with design and construction within the limits placed by budget and staffing levels. The first contract for clearing, grubbing and grading was awarded in 1978 for 4.8 kilometres immediately east of Hope from Nicolum Creek to Piers Creek. This contract is noteworthy for a diversion of the Coquihalla River which was designed and undertaken to preserve the river's steelhead fisheries values. The existing river channel was maintained while a new channel was constructed which replicated the natural riverbed complete with boulders and pools. This was the forerunner of a new and more imaginative kind of environmental highway design and construction which brought the Ministry an Environmental Award.

A second contract was awarded in June 1980 for grading of 4.5 kilometres between Boston Bar Creek summit and Dry Gulch.

Slow-down in Construction 1981-1982

With the economic recession and consequent reduction in the rate of traffic increase, the pace of construction was slowed in the beginning of 1981. Several references were made to this in the Legislature. On June 28, 1982 the Minister, the Honourable Alex Fraser, stated:

> "The Coquihalla is a huge project. While they're working on it at the moment, it's going a little slower than expected. I don't believe you'll see the Hope to Merritt section until 1989. We are talking here of having a four-lane freeway from Hope to Merritt with limited access, which would shorten the distance from Kamloops to Vancouver by some 60 miles. We're just starting to get into the tough mountain country there now, and it's going to take a lot of money and a fair amount of time."
>
> [Hansard, p. 8475]

By the end of 1983 work had barely begun: only three contracts had been let totalling about 18.5 kilometres of the 120 kilometres between Hope and Merritt. These three were grade construction contracts and two of them were separated by the deep Dry Gulch ravine. Very little of the grade construction and none of the approximately thirty bridges had even been designed. Mr. Harvey states in his manuscript, ". . . The most positive thing that could be said about the situation when 1984 dawned was that at least something had been done about the problem of the highway disturbing the Coldwater Indian Band. The decision on this was to reroute the roadway high on the slopes on the right side of the Coldwater River and thus avoid entering the Indian Reserves."

The Fast-track Decision

In April 1984 the Ministry's senior staff was alerted to the prospect of reactivating construction of the Coquihalla Highway for completion in time for Expo 86.

Fast-tracking the project was a subject of discussion at the Cabinet Retreat at Cowichan during April 1984, where it was decided to expedite construction of the Coquihalla Highway for completion in 1986. When this decision was made, the Ministry immediately took action to retain

consulting engineers, prepare contracts, and marshall the necessary resources. Between May and the end of September 1984 twenty-one contracts were awarded for various work on the Coquihalla Highway.

Only once work was well underway was the project officially announced. This took place at a Cabinet meeting held in Merritt on September 26, 1984. The announcement's first paragraph is as follows:

> "Premier Bill Bennett announced today that the Coquihalla Highway — a $375 million, four-lane expressway from Hope to Kamloops — will be completed early so that Expo 86 will be a truly province-wide event."
>
> [News Release, Premier's Office]

Subsequently, the Honourable Alex Fraser, Minister announced in the Legislature (February 11, 1985) that:

> ". . . it is planned to have the highway completed to Merritt by 1986 and from Merritt to Kamloops by the fall of 1987."
>
> [Hansard, p. 4891]

Estimates

In the records of the Ministry, the first cost estimate for a highway through the Coquihalla Valley is found in a 1963 memorandum from an employee who had accompanied a truck caravan from Merritt to Hope. This is truly a reconnaissance estimate. No standards are stated and the estimate is based on a rough assessment of the difficulty of construction of the various sections. The estimated cost is given at $10–$11 million from Hope to Merritt.

The next record is contained in the Ministry 1973 report by H.A. Mantle, which established the route in some detail and which states the standard as "a four-lane divided highway with two twenty-four foot pavements and ten foot shoulders with a forty-four foot minimum median strip". The design speed is stated as 70 m.p.h. and the total estimated cost (including all construction costs and the right-of-way) is given as just under $60 million. The report recommends a ten year construction period commencing no later than 1977. The report also gives recommendations for additional environmental investigations, geotechnical studies, and avalanche control work.

In the years following 1973 there are references in the Ministry's files to work that was under way. This included traffic studies, studies of possible alignments and property conflicts, and a large amount of consultation with other government agencies on environmental issues. Cost estimates are not a significant part of this work. In 1976, a memorandum from Mr. E.E. Readshaw, Director of the Ministry's Design and Surveys Branch refers to the 1973 estimate and notes that in 1976 the cost would approach $160 million.

During 1977 and 1978 a variety of estimates were made in the range $140 million to $195 million. These were for internal ministry purposes with no statement of either the design standard or of the items included in the estimates. In 1979 a cost evaluation was made of three options: a two-lane highway from Hope to Merritt; a two-lane highway capable of later expansion to four lanes; and a four-lane highway. This evaluation was stated to be ". . . part of the total input required to evaluate all alternatives to increase capacity from Hope to the Interior." It reported an "order of magnitude" estimate of $210 million for a four-lane highway.

In the next year, 1979, a further memorandum from Mr. Readshaw of Design and Surveys reported an estimated cost in the order of $250 million. No new documentation was referenced, but rather this estimate was based on an update of previous work with provision for increased costs of the final alignment. This memorandum addressed the issue of potential cost savings through the "two-lane expandable" option, notes that the functional plan is not complete and makes no reference to whether the estimate includes other than construction costs.

The 1979 estimates were the last ones

which the Ministry could supply in response to the Commission's Information Requests. Therefore, in the Commission's public hearing of October 20, 1987, the Ministry's Assistant Deputy Minister of Operations, Mr. Elston, was questioned on this topic. He stated that the 1979 estimate of $250 million had been the subject of discussion at a short meeting of senior Ministry staff in 1984 — after Cabinet's fast-track decision had been made. Mr. Elston testified that those present at the meeting had decided that the $250 million was "a good figure to go with".

[Transcript, p. 485]

The Commission has been given no documentary evidence by the Ministry of estimates for the Merritt to Kamloops section of the Coquihalla project. $125 million as the estimate for this section can be arrived at from the September 26, 1984 news release which stated ". . . a $375 million, four-lane expressway from Hope to Kamloops . . ." Thus with Hope to Merritt estimated at $250 million the implied estimate for Merritt to Kamloops was $125 million.

In reference to these estimated costs Mr. Elston gave evidence as follows:

> "MR. MACINTOSH: Q: Do you know the basis for [the $250 million] figure at that time, that is 1984?
>
> MR. ELSTON: A: Well the $250 figure was the figure that was produced in 1978.
>
> MR. MACINTOSH: Q: Yes.
>
> MR. ELSTON: A: That was then revisited in the light of work that had gone on since that time. The unit prices were looked at and it was noted that although prices had risen to a peak since 1978 they had dropped off and there was a strong downward trend at that time, so prices were not too far off what they were in 1978. The same figure was therefore felt reliable enough at that reconnaissance level for 1984.
>
> MR. MACINTOSH: Q: Yes.
>
> MR. ELSTON: A: The $125 million figure, there was some preliminary work undertaken by a consultant for us, utilizing some mapping, which was then again updated to produce the $125 million."
>
> [Transcript, pp. 436-437]

Similarly, the Commission has not seen any documentary evidence to support the $125 million estimate for the Okanagan connector, Merritt to Peachland. The only basis the Commission has received for this is a statement by the Minister in the Legislature on June 5, 1985:

> ". . . in other words we are probably looking at a minimum of $125 million going from Merritt to Peachland . . ."
>
> [Hansard, p. 6456]

Subsequently, in the Ministry Brief to the Commission, it was stated that upon completion, the total expenditures for Merritt to Peachland construction are:

> ". . . currently forecast at $225–$270 million . . .".
>
> [Ministry Brief, p. 32]

Estimates can only be made if project scope is known. As a project is refined from concept through to completion so should the scope and the estimates be refined.

Some of the estimates made in the 1970s considered scope, that is to say, design speed, number of lanes, lane width, etc. But there is no evidence of progressive systematic refinement of either scope or estimates. No documentation was provided for systematic development and approval of the scope. Figure 2 shows the major changes in scope identified to the Commission. These changes were never reflected in the estimates.

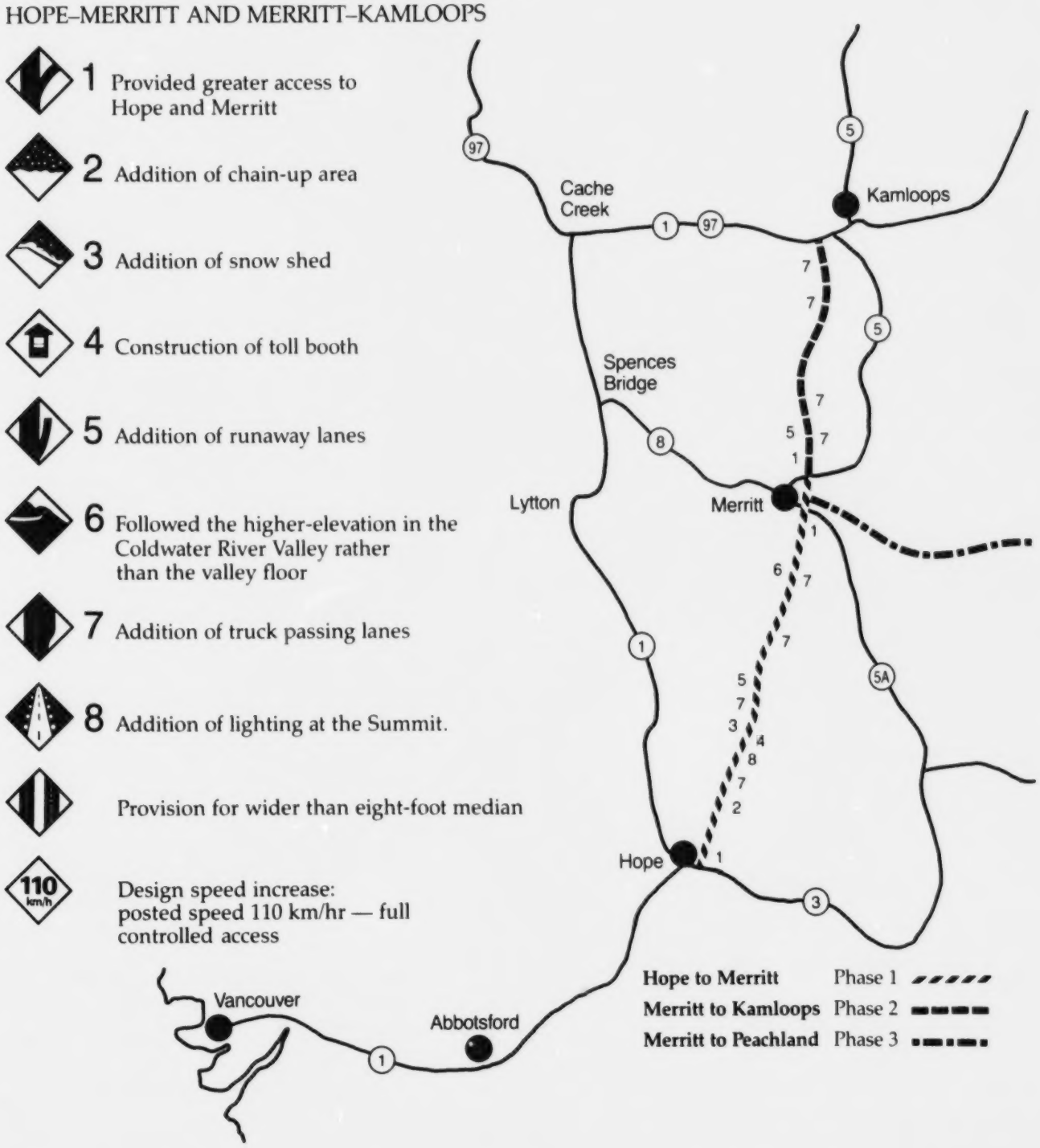
Similarly, the cost implications of accelerated construction of the project were never carried forward to the estimates.

The Inquiry received evidence about the cost of "fast-tracking" the project. These are real and legitimate project costs and are discussed in Chapter 3. There is no

Fig. 2

Coquihalla Highway System — Scope Changes

HOPE–MERRITT AND MERRITT–KAMLOOPS



evidence that these costs formed any part of the estimate.

Conclusions: Estimates

For the Coquihalla Highway, Hope-Merritt, the Commission concludes that:

- The only cost estimate available in 1977 when government decided to build the project was based on a 1973 reconnaissance estimate which had never been systematically refined.
- No new estimates were made nor were estimates properly updated as the project developed. Rather, estimates were only incidently reviewed for the purpose of comparing alternatives.
- If cost was considered in the 1984 decision to accelerate the project, it was based on earlier estimates which were not properly re-evaluated and did not reflect the additions to the project scope or the fast-track schedule.
- The 1984 "re-visiting" of the earlier estimate was done after the Cabinet's decision to proceed and did not consider the enlarged project scope or the "fast-track" schedule.
- The lack of any estimate for the fast-tracked project gave the impression that the project "was to be built at any cost."

The Commission further concludes that there has never been a proper cost estimate for either the Merritt–Kamloops section or the Merritt–Peachland section of the Coquihalla Highway.

Estimates, their preparation and use are discussed in detail in Chapter 6.

Public Statements

From the original announcement in 1977 through to 1986, with one exception, the government maintained in public that $250 million was the projected cost of the Hope to Merritt section. The exception was on July 26, 1979, when the Minister, Mr. Fraser, in answer to a number of questions in the Legislature, quoted a figure of $150 million. This is apparently an inadvertent error.

[Hansard, p. 1047]

As the previous section showed, up until June 1984, information available within the Ministry confirmed $250 million as an estimate for completion of the Hope to Merritt section. Even the decision to accelerate construction, as Mr. Elston testified, did not cause the Ministry to alter its judgement that $250 million for this section was an acceptable order-of-magnitude estimate.

However, within nine months, that is by March 31, 1985, nearly $100 million had been spent on the Hope to Merritt section alone. This brought total expenditure, including the construction work done from 1977 onwards, to a total of approximately $120 million. In the same month, the Estimates put forward to the Legislature in the 1985-86 Budget requested a further amount of $281 million for "Coquihalla Highway and Related Projects".

This was described as an all-inclusive figure — as provision was made for "planning, engineering, design, survey, construction, reconstruction, paving and right-of-way acquisition and property, equipment and machinery purchases."

Having added this one-year budget provision of $281 million to the $120 million already spent on the Hope–Merritt construction, the Commission is surprised that anyone responsible for or involved with the project could not have foreseen that final costs would exceed $250 million before the project was complete.

However, during this time the government and senior officials of the Ministry maintained the fiction that $250 million for the Hope to Merritt section and a total of $375 million from Hope to Kamloops were realistic estimates. A selection of published statements follows:

Hansard, February 11, 1985

HON. A. FRASER: . . . The estimated cost of the road from Hope to Kamloops is $375 million.

[Hansard, p. 4891]

Ministry News Release, May 28, 1985

COQUIHALLA TOUR

VICTORIA — Premier Bill Bennett joined Highways Minister Alex Fraser, and area MLAs, Tom Waterland, Minister of Forests, and Claude Richmond, Minister of Tourism, today during ceremonies to mark the halfway completion point of the $375 million Coquihalla Highway.

Hansard, June 5, 1985

HON. A. FRASER: . . . our estimate was: phase 1, which is Hope to Merritt, $250 million — I don't know how we're going to make out there. Most of the contracts are let, but some things could happen. The job's about half complete, but it looks like we're not going to be far out. Phase 2, Merritt to Kamloops: we've let one contract and that is estimated at $125 million. We'll have to wait and see. There has only been one contract let. As I recall, it's for about 10 or 12 kilometers, heading from Merritt toward Kamloops, and we have 63 more kilometers to call to build a four-lane from Merritt to Kamloops.

[Hansard, p. 6450]

Ministry News Release, May 7, 1986

". . . Another major initiative this year will be the opening of Phase 1 of the Coquihalla Highway on May 16. This multi-lane $375 million freeway will shorten travel time . . ."

Therefore, at the Commission's October 19, 1987, hearings, testimony was taken on the origin of these misleading figures from Mr. Al Rhodes, who was Acting Deputy Minister up to December 31, 1985, and from Mr. Tom Johnson, who was Assistant Deputy Minister, Operations up to that date and was the Ministry Executive directly responsible for the Coquihalla project.

"MR. MACINTOSH: Q: . . . That's a news release from the Office of the Premier dated September 26th of 1984 and it refers to a total project cost of $375 million for Hope to Kamloops and refers to a construction timing deadline of around Expo . . . The first question is whether that figure came from within the Ministry.

MR. RHODES: A: It did.

[Transcript, p. 231]

MR. MACINTOSH: Q: . . . What I have in mind is an extract from Hansard . . . by Mr. Fraser, in February of '85, where he speaks of Phase 1 and Phase 2 costing $375, and my question again, Mr. Rhodes, would be whether that figure came from within the Ministry, and if so, from where.

MR. RHODES: A: I would believe it did. . . .

[Transcript, p. 232]

Following Mr. Rhodes' retirement, on January 1, 1986, Mr. Johnson was promoted to Deputy Minister.

MR. MACINTOSH: Q: At Tab 40 is a press release from the Minister dated May 7th, 1986 referring to the cost of Phases 1 and 2 as $375 million, and the question is whether that figure came from within the ministry.

MR. TOM JOHNSON: A: The process for preparing press releases for recommendation to the minister is that they are in fact prepared with — by ministry public information staff and they would take those numbers off of files of previous announcements and other information that they have available.

MR. MACINTOSH: Q: That would be yes, then, that the figure would come from within the ministry?

MR. JOHNSON: Q: Yes.

[Transcript, p. 234]

From this testimony it is clear that the Ministry was the source of these misleading cost estimates. The Commission concludes that senior staff were aware or ought to have been aware

that they were not correct.

While the published information presented to the Legislature would have allowed anyone interested to have deduced that the final costs would exceed the Minister's and Ministry's published estimates, staff within the Ministry knew the amount of work yet to be done, and costs of the upcoming construction season.

Ministry staff knew that all the grade construction contracts had been let, yet the majority were less than half complete — particularly those in the difficult areas of Boston Bar Creek. Most, but not all, of the contracts for the approximately 30 bridges and structures had been awarded, but work was not far advanced. No paving had been completed. To achieve the target opening date of May 1986, the summer of 1985 needed to be the heaviest construction period of the entire project. In the months of June, July, August and September 1985 expenditures approached an average of $40 million per month.

By November 30, 1985, the Ministry's spending had reached a total of $415 million for Coquihalla and related projects, and a total of more than $300 million for Coquihalla — Hope to Merritt alone.

Total cost figures were compiled by the Ministry's Financial Services Branch each month, beginning as near as the Commission can determine in July 1985, in a document entitled "Summary of Expenditures — Coquihalla Highway". This was an internal working document whose primary purpose was to aid in managing the Ministry's annual cash flow in relation to the legislative allocation. Nevertheless it provided a record of the amount expended to date in a form from which the total costs of the project could be readily seen at "the bottom line."

It is the testimony of both Mr. Rhodes and other Ministry senior staff that the Minister was aware of these statements of costs, as the statements had been provided to his office on a routine basis. Also, the issue of costs was discussed as a topic at meetings between the Minister and his staff. Mr. Rhodes testified to the Commission's hearing on October 19, 1987 as the leader of a panel comprised of himself, Mr. Tom Johnson, who succeede Mr. Rhodes as Deputy Minister, and Mr. Stu Price, who was the Ministry's Directo of Financial Services. The testimony is as follows:

"MR. MACINTOSH: Q: All right, now, Mr. Rhodes, I understand that the ministry employees, certain of them, had occasion to meet with the Minister of the department from time to time with regard to the Coquihalla project?

MR. RHODES: A: We have regular staff meetings in the Minister's office [on] all matters including the Coquihalla.

MR. MACINTOSH: Q: Yes, and in the latter half of 1985, let's say from July of '85 up to the end of that year how frequently would those meetings be?

MR. RHODES: A: A week or ten days.

MR. MACINTOSH: Q: Yes, and generally speaking who was in attendance at those meetings?

MR. RHODES: A: The Minister, his Executive Assistant, myself [as Deputy Minister], generally the Assistant Deputy Minister of Operations [Mr. Tom Johnson], frequently the Superintendent of Motor Vehicles and on occasion the [Assistant] Deputy Minister of Transportation.

MR. MACINTOSH: Q: Now in that period, that's the latter half of 1985, were the costs associated with the Coquihalla project, were they a subject of frequent discussion?

MR. RHODES: A: Current costs were, and problems associated with construction.

MR. MACINTOSH: Q: Yes, and is it fair to say that in that period, in those meetings, that the Coquihalla was the topic of the day?

MR. RHODES: A: Generally; it was one of the main topics.

MR. MACINTOSH: Q: All right, and I understand that cost data was furnished by the ministry to the Minister's office, is that correct?

MR. RHODES: A: That is correct.

MR. MACINTOSH: Q: And in that regard there's a book of documents that's been prepared, and I'd like you to look at Tab 4, and that is a sheet that is entitled Ministry of Transportation and Highways, Summary of Expenditures, Coquihalla Highway, as at December 31, 1985, fiscal year 1985-1986. Do you have that?

MR. RHODES: A: I do.

MR. MACINTOSH: Q: When I turn in that document to page number 10 the final figure that I see on the page is entitled Grand Total, Coquihalla Highway projects, $410,205,254. Now, that sheet of expenses, I understand that was provided by the ministry to the Minister, is that correct?

MR. RHODES: A: That is correct.

MR. MACINTOSH: Q: And that was provided within the following practice, is that the practice?

MR. RHODES: A: That is correct.

MR. MACINTOSH: Q: And that last figure that I read, $410 million, I gather that would reflect the amount that had been spent on the Coquihalla project to date?

MR. RHODES: A: To date, that's correct.

MR. MACINTOSH: Q: And that is the sort of information which would be the subject of discussion at these weekly or every ten day meetings with the Minister?

MR. RHODES: A: It was part of the discussion.

MR. MACINTOSH: Q: Yes? Now, you don't have it in front of you there but I can show you a copy of the comparable document for the period ending November 30 of 1985 and the figure there for the total expended to date is $392,500,954, say $393 million. That would reflect the total spent on the project to the end of November, 1985?

MR. RHODES: A: Correct.

MR. MACINTOSH: Q: And again that document would be produced by the ministry and presented to the Minister?

MR. RHODES: A: That is correct."

[Transcript, p. 234-7]

At this point, the Chairman of the hearing sought to clarify the basis of the "total expended to date" referred to by Mr. Rhodes:

THE CHAIRMAN: Q. Is that 410 million the total to date or the total in the fiscal year?

MR. RHODES: A. Total to date, sir.

THE CHAIRMAN: Q. That's all inclusive, '84, '83 and earlier?

MR. RHODES: A. That is correct.

MR. PRICE: A. Not the earlier, not the 22 million.

MR. RHODES: A. There was a sum of $22 million expended before we got into the accelerated program in '84. I am told by the Director of Financial Services that that 22 million is not in.

THE CHAIRMAN: Q. So the total to date in effect is 432?

MR. RHODES: A. That is correct.

[Transcript, p. 236-7]

On whether the Minister had been fully briefed on these monthly statements of expenditure, Mr. Rhodes added to his evidence at the Inquiry's November 5, 1987 hearings.

MR. MACINTOSH: Thank you. Now, on another point, Mr. Rhodes. Last day you testified, you spoke of meetings with the Minister, with Mr. Fraser in the

latter part of '85 and I speak of the September to December period, do you recall?

MR. RHODES: Yes.

MR. MACINTOSH: And you had occasion to meet with the Minister, I believe it was two or three times per month and costs were discussed.

MR. RHODES: Yes, the costs of all highway programs.

MR. MACINTOSH: Right, including the costs of the Coquihalla?

MR. RHODES: Yes, including the costs of Coquihalla.

MR. MACINTOSH: Yes, and do you recall whether or not you discussed with the Minister, the costs of the Coquihalla, in particular?

MR. RHODES: Specifically I would say no, as to the relationship of the costs, we spoke of costs.

MR. MACINTOSH: All right.

MR. RHODES: We were short of money in the two Votes throughout that period and we were preparing —

MR. MACINTOSH: All right. I wasn't thinking of the costs compared to the estimate, or the initial budget. I was thinking of the costs of the Coquihalla specifically as they were being incurred. Did you discuss those with the Minister?

MR. RHODES: Yes, they were discussed.

MR. MACINTOSH: And I speak of the costs of the Coquihalla specifically as opposed to the costs of other projects.

MR. RHODES: Yes.

MR. MACINTOSH: All right, and you'll recall last day that documents were placed in evidence with you as the witness showing the monthly costs of the Coquihalla in, I believe, November and December of '85 do you recall that?

MR. RHODES: I do.

MR. MACINTOSH: And they had on them a figure of the amounts spent to date with regard to Coquihalla, do you recall that?

MR. RHODES: That's correct.

MR. MACINTOSH: And those were discussed with the Minister?

MR. RHODES: They were provided to the Minister as —

MR. MACINTOSH: Yes, all right. You appear to draw a distinction between provided to and discussed with. Am I hearing you correctly?

MR. RHODES: I have no recall of discussing those statements with me, but they were provided month to month.

(Transcript, pp. 674–6]

Mr. Fraser was also asked about his knowledge of the cost statements at the Commission's November 5, 1987 hearing. Mr. Fraser spoke through his interpreter, Mr. Frank Basile:

"MR. MACINTOSH: Q: Are you prepared to acknowledge, though, Mr. Fraser that you received from Mr. Rhodes or his staff on a monthly basis, documents showing the actual costs to date of the Coquihalla?

MR. BASILE: A: He said, he remembers getting statements regularly from the Deputy Minister but it dealt with the expenditures on all projects, and if Coquihalla was listed, it would be one of the projects listed, but not specifically set out as a separate expenditure sheet.

MR. MACINTOSH: All right. May I see the first binder please, the first Exhibit book.

In here, sir, are copies of monthly statements regarding costs of the Coquihalla. That one is December of 1985, the month-end, and it's the evidence of Mr. Rhodes that that document was presented to your office. And is it possible that that is the case?

MR. BASILE: A: He says, sure he

doesn't doubt for a minute. He said, this document shows construction projects for the Coquihalla as well as off-site projects for the Coquihalla.

MR. MACINTOSH: Q: Yes.

MR. BASILE: A: He said, they were all lumped together.

MR. MACINTOSH: Q: Yes. All right. And can you accept, Mr. Fraser, that a document of that sort was presented monthly from Mr. Rhodes to your office?

MR. BASILE: A: He said, I won't deny it."

[Transcript, p. 834–5]

Yet in November 1985 the Minister stated:

Hansard, November 20, 1985

HON. A. FRASER: Mr. Chairman, the amount stated in here under Section 3 is $375 million, and that's the estimated cost of building the Coquihalla from Hope to Merritt and from Merritt to Kamloops. We hope to achieve that goal by freeze-up 1987.

[Hansard, p. 7045]

HON. A. FRASER: The member refers to what we call phase 3. The $375 million refers to phases 1 and 2. We haven't announced that we're going to go ahead with phase 3 from approximately Merritt to approximately Peachland. We haven't come up with any firm dollars on that. In fact, it's my understanding that the design and engineering, heading west from Peachland, is taking place right now. I believe it's a rough estimate before final engineering, but phase 3 is considered to be probably $125 million. But they haven't even settled the route as yet as far as phase 3 is concerned, to come up with an accurate estimate.

[Hansard, p. 7046]

HON. A. FRASER: . . . At the present time we have 90 percent of the road built and paved from Hope to Merritt, which is phase 1. According to what we know now, we should open that section in May or June of 1986. We're in the process at the present time of calling contracts on phase 2 from Merritt to Kamloops. The bids that are coming in are excellent. It appears that we will be able to build from Hope to Merritt and Merritt to Kamloops for the $375 million, have the job completed on a four-lane basis and hook up with the Trans-Canada near the Afton copper mine on the Trans-Canada west of Kamloops by freeze-up 1987. But we will probably have the section from Hope to Merritt available for use in late May 1986. In the interim, we have rebuilt and improved Highway 8 to Spences Bridge and Highway 5 from Merritt to Kamloops to accommodate the anticipated increased traffic that we will put on those roads. That work is already completed. But we are still of the opinion that we will do phase 1 and phase 2 for $375 million. I might tell the member for New Westminster that we are building a snowshed at a cost of $7.5 million, and I think we got the roof on the snowshed yesterday.

[Hansard, p. 7046]

HON. A. FRASER: I can't give you an accurate figure, but I would be guessing fairly close if I said we've probably spent about $250 million to $260 million now on the section between Hope and Merritt, and probably $5 million to $7 million between Merritt and Kamloops, because we have already done a small amount of construction there.

[Hansard, p. 7046]

HON. A. FRASER: I want to clear up one point. You're saying that I said 90 percent of this project is completed. I said 90 percent of phase 1 is completed, and we still have most of all of phase 2 to do. I want to make that abundantly clear. We are not 90 percent completed — of the $375 million that is in section 3. It is 90 percent of phase 1 and a very little percentage of phase 2. Those contract tender calls are just going out, as I said earlier, so the percentage done is a lot less than your 90 percent. Ninety percent of the $375 million total is far too high; we are way lower than that.

[Hansard, p. 7048]

Hansard, November 21, 1985

HON. A. FRASER: On that subject, I think that's what the bill says. We intend to spend $375 million on phase 1 and phase 2. This would authorize the government to borrow that if required.

HON. A. FRASER: Well, Mr. Chairman, I don't know where to start or stop, there are so many figures being batted around here. But the figure that we're talking about in the bill is $375 million. I have always said that phases 1 and 2, Hope to Merritt and Merritt to Kamloops, would be built for that amount.

I have used a lot of estimated figures to try to satisfy the members' questions. As an example, $260 million is what I think contracts have been awarded for so far. Of that $260 million, I would estimate and guesstimate $200 million has actually been paid out to the end of October. The member for Okanagan North (Mr. MacWilliam) took as an example the $200 million and added on $375 million. You know, I don't know what college he came from, but it doesn't add up. What I'm saying is that it is estimated at this stage that $375 million will look after phases 1 and 2. The expensive one is phase 1, which is coming close to completion. We've hardly started, as I told you yesterday, on phase 2. It breaks down, in rough estimates, at $250 million for phase 1 and $125 million for phase 2. If it goes over the $250 million on phase 1, it's anticipated that the global figure would still be $375 million for completion of phase 1 and phase 2. I want to emphasize that that's the area from Hope to Merritt and Merritt to Kamloops.

[Hansard, p. 7079]

The evidence shows that the Minister was aware of the Ministry's monthly cost statement entitled, "Statement of Authorizations and Expenditures — Coquihalla Highway." This monthly statement dated October 31, 1985 shows a total cost of $361 million for the Coquihalla Highway.

On this same statement the items entitled Coquihalla Highway Hope–Merritt total $286 million. It was noted in the evidence that these statements did not include expenditures of approximately $22 million prior to March 31, 1984. These expenditures were almost exclusively on the Hope–Merritt section. Accordingly, the total expenditure Coquihalla Highway Hope–Merritt, as of October 31, 1985 was, by the Ministry records, approximately $308 million.

The Hansard record for November 20–21, 1985 is clear that the Minister spoke with apparent authority and detailed knowledge about expenditures, progress of the work, bid prices and estimated costs.

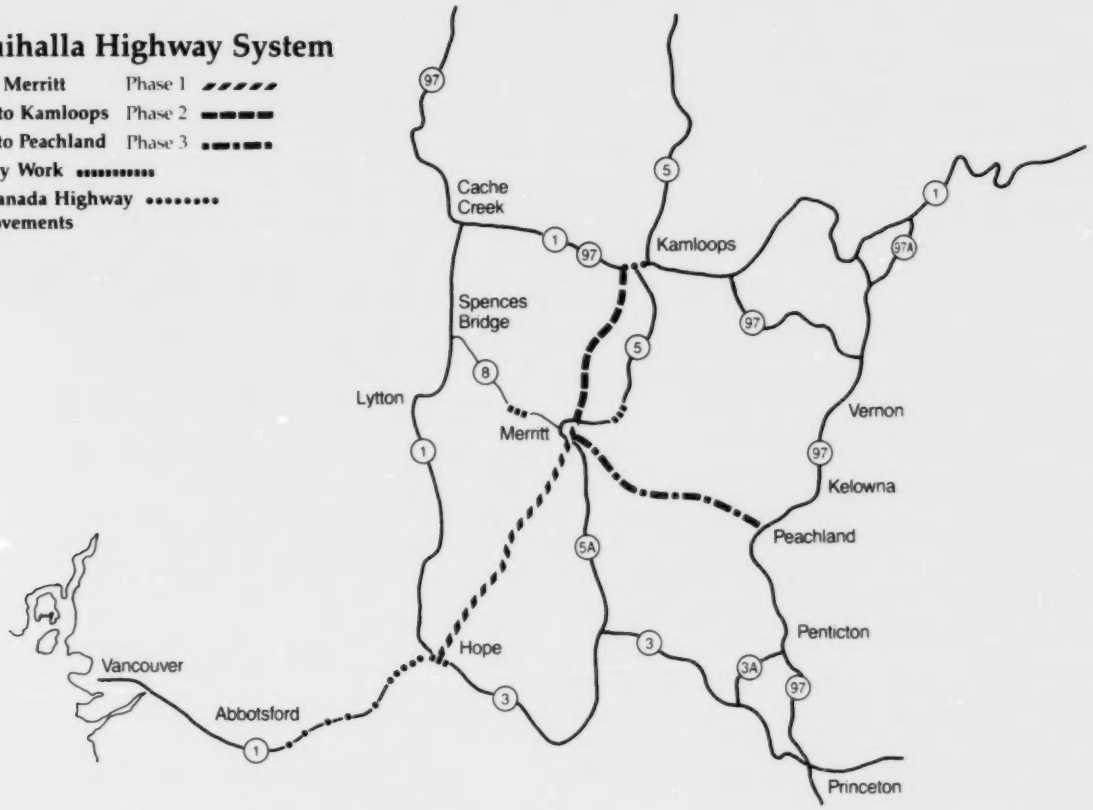
Conclusions: Public Statements

About public statements the Commission concludes:

- Public statements about costs have been based on the Ministry's inadequate estimates.
- News Release cost estimates came from or were provided by the Ministry.
- Not later than March 1985, the Ministry senior staff knew or ought to have known that the News Release costs of $250 million Hope–Merritt and $375 million Hope–Kamloops were wrong.
- Not later than mid-1985, the Minister knew or ought to have known that the published totals $250 million for Hope–Merritt and $375 million for Hope–Kamloops were wrong.

Fig. 3
Coquihalla Highway System

Hope to Merritt Phase 1
Merritt to Kamloops Phase 2
Merritt to Peachland Phase 3
Ancillary Work
Trans-Canada Highway Improvements



ANCILLARY PROJECTS

Highway 3: Hope to Nicolum Creek
Alexander Creek Bridge

Highway 5: Upper Nicola to Peter Hope
Lake Road and Merritt District
Boundary to Highway 1

Highway 8: Three Mile Bridge
Curnow Bridge
Rattlesnake Bridge

Meadow Creek Road Improvements

Highland Valley Road Improvements

Various Rights of Way and Property Purchases

TRANS-CANADA HIGHWAY IMPROVEMENTS

Vicinity of Hope
Floods Underpass
Silverhope Underpass
Tomberry Road Bridge
Hope Overpass
Thacker Overpass
Silverhope Creek Bridge
Floods to Hope Construction
Whatcom Interchange
Popkum Interchange
Wahlach to Cheam View Construction
Cheam View to Jones Creek Construction
Hunter Creek Interchange

Vicinity of Kamloops
Aberdeen Interchange
Old Ski Hill to Columbia Street Construction
Various property purchases electrical work

Costs

The Commission has had difficulty in determining the final cost of the Coquihalla Highway. There are a number of reasons for this. First, there was never a clear-cut definition of the highway or of the sections of the highway. Second, cost information was not to be found in any one place under any one heading. Third, the cost information available included substantial amounts of work related to the Coquihalla Highway with no clear boundary definitions. Finally, the Ministry paid little attention to costs in total.

Therefore, the Commission's first task, in co-operation with the Ministry, was to define the boundaries of the various sections and then to ensure that the cost of all work done within those boundaries was included in the reported costs.

Accordingly, for the purposes of determining and agreeing on costs which could be compared with the estimates, the following definitions were agreed with the Ministry, adopted by the Inquiry and are indicated on Figure 3. The western boundary of the Coquihalla Highway is the Nicolum Creek Bridge near Hope. The Merritt end includes the Merritt By-pass and terminates with and includes the Nicola Interchange. The Merritt to Kamloops section includes all work on the Trans-Canada Highway up to and including the Copperhead Drive Underpass. It was not necessary to establish definite boundaries for the section from Merritt to Peachland in the Okanagan, as little construction has taken place.

Other major works which were done as part of or in conjunction with the Coquihalla project also needed definition. These fall into two categories: those which were considered necessary on Highways 3, 5 and 8 and other connecting roads in order to move traffic to and from the Hope-Merritt section of the Coquihalla; and those improvements to the Trans-Canada Highway (Highway 1) which were done in conjunction with and as part of the Coquihalla. These latter works were funded with the Coquihalla as part of the provincial government's 1985/86 Economic Renewal Program. All of these works were classified for the first time in the Ministry Brief, Appendix B, as respectively Ancillary Works, and Trans-Canada Highway Improvements. These terms have been adopted by the Inquiry.

The Ancillary works and Trans-Canada Highway Improvements are listed with Figure 3.

With these definitions in place, the Commission's research engineer in cooperation with the Ministry was, over a period of several weeks, able to identify the contracts and other work undertaken within each of the defined sections.

The next task was to determine the cost of the work within the defined boundaries. This was an equally time-consuming process, as the different components of total cost are not consolidated. The following sources were turned to by the Inquiry.

First, the *Financial Statements* of the Province contain the Ministry's annual expenditures. For fiscal 1985/6, the statements are not sufficiently specific to define the Coquihalla project. In addition, they provide information for only a single fiscal year and thus do not show the total cost of such a multi-year project.

Second, the Ministry's *Annual Report* lists all work done during the year by Legislative Vote and by Electoral District. The *Reports* also give information and commentary on work under design and under construction. Thus, by combining the data for the Yale-Lillooet, Kamloops, Chilliwack and Central Fraser Valley electoral districts, it is possible to come much closer to a complete statement of costs. However, like the Province's *Financial Statements*, only annual expenditure is reported and to learn the overall cost of a project successive *Annual Reports* must be studied.

But not all the project costs are identified in the *Annual Reports* under the Vote and Electoral District headings. Such items as the cost of right-of-way and other property, of Ministry-supplied goods and services,

are to be found elsewhere, not assigned to the project.

This work and research to define boundaries and costs disclosed several anomalies in reporting of costs. These anomalies led to the extensive investigations reported in Chapter 5.

By September 14, 1987 when the Commission received the Ministry's Brief, the costs were consolidated and shown in its Appendix B. This was reviewed by both the research engineer and investigative accountant. The information from Schedule C of the accountant's report is reproduced here as the Commission's conclusion as to the total costs of the Coquihalla Highway including the Ancillary and Trans-Canada Improvements. The build-up of costs for Hope–Merritt and Merritt–Kamloops is shown graphically in Figure 4.

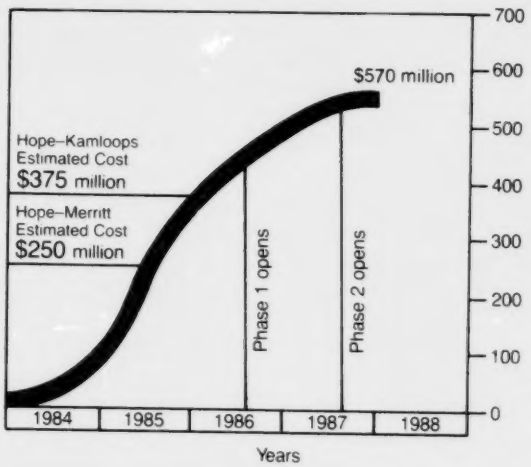


Fig. 4 Expenditures Hope–Merritt and Merritt–Kamloops (Showing dates when estimated costs were exceeded)

Coquihalla System Total Costs

1977 to August 1987 with estimates to completion[1]

	$	$
Phase I — from Ministry Brief Schedule "B"		414,718,454
Phase II — from Ministry Brief Schedule "B"	135,485,447	
Forecast to complete — Ministry Brief p. 32	20,000,000	155,485,447
Phase III — from Ministry Brief Schedule "B"	38,734,853	
Forecast to complete — Ministry Brief p. 32	230,000,000	268,734,853
Unclassified as to Phase — from Ministry Brief Schedule "B"		4,877,840
Further work 1986-1987		4,030,000
TOTAL COQUIHALLA		**847,846,594**
Ancillary Projects — expended to August 1987 — from Ministry Brief Schedule "B"	53,396,138	
Trans-Canada Highway Improvements — expended to August 1987 from Ministry Brief Schedule "B"	97,192,005	150,588,143
GRAND TOTAL SYSTEM COSTS		**998,434,737**

[1] *For the full explanation and definition of the entries in this statement,* see *p. ix of the Summary.*

Conclusions: Estimates and Costs

From all of the information about estimates and costs — documents supplied by the Ministry, published News Releases, records of the debates of the Legislature and all of the evidence — the Commission concludes that the reasons for the difference between estimates and costs are:

- the haphazard, misleading, and incomplete estimates;
- the scope and scheduling changes which were never included in any estimate;
- the misleading public statements of cost; and
- the equally haphazard and incomplete records of costs maintained within the Ministry and reported to the public.

The Commission concludes that to compare the estimates and reported costs of the Coquihalla Highway project is to expose the inadequacies of both.

CHAPTER 3

Coquihalla Highway – Construction

Introduction

Construction of the Coquihalla Highway was a major undertaking. To quote the Ministry Brief ". . . it was the most complex and concentrated freeway construction project of recent years in North America". (Ministry Brief, p. 21)

The majority of the Coquihalla Hope-Merritt highway was built over a period of 24 months under approximately 60 major contracts:

- 23 were for grade construction — which prepared the road-bed and involved blasting rock, excavation, earth moving, etc. The total amount spent was approximately $200 million;
- 17 were for the construction of bridges and other structures — totalling approximately $70 million. The major ones were for the Great Bear Snow Shed, Ladner Creek Bridge, and Dry Gulch Bridge;
- 6 were paving contracts; and
- 12 were gravel supply contracts.

There were also contracts for electrical installations, maintenance depots, avalanche control works, toll booths, communications and signage equipment, surveys, publicity, and a host of other items.

In addition, 27 engineering companies were contracted to produce the designs for the grade construction and bridge contracts, 12 consultants provided advice on geotechnical and foundation conditions, 19 environmental consultants were retained, and dozens of other firms provided goods and services to the Ministry.

To organize, supervise, and pay for these vast resources within a period of 24 months was a herculean task. The aims of government in its decision to build the highway in time for EXPO were explained by Mr. Bud Smith, then Principal Secretary in the Office of the Premier, who testified:

> "Now, the public policy considerations for doing that were fivefold. At that time, that is to say in 1984, the unemployment rate amongst construction workers, particularly in that area of heavy construction, road construction, was somewhere in the neighbourhood of 50 per cent, that's 5-0 per cent. Secondly, the engineering community in the Province of British Columbia was in serious difficulty because there wasn't any work going on. We had had, as you know, throughout the 1960's a tremendous amount of construction work, a lot of the private sector and some of the public sector, the dams and so on, and that work had all almost coincidentally tapered off, and there was no capital there were no capital projects going on in the private sector as there are today, in pulpmills and mines and so on, so there was a very real concern that our engineering community, particularly the civil and structural engineering community was in serious and grave danger of disappearing from the province. That was consideration #2.
>
> Number 3, there was a concern that, and there was a need to have built into the Interior, the south central Interior, which at that time had an unemployment factor

some six to eight points above the provincial average, there was a very real and profound need to diversify the economy.

Transportation infrastructure was seen to be an important component of that and to get the tourism capacity increased, to get the ability to move goods to the coast, so that was policy consideration #4. Policy consideration #5 was that on the Trans Canada Highway between Hope and Kamloops, between the five years preceding 1986 seventeen people were killed every year on the road.

The projections that had been given with respect to Expo were that the average person who came to Expo from out of province would spend I believe four days at Expo and some seven or eight days around the province. So you could see then that if you had seventeen people a year being killed on the road and you added that kind of traffic capacity and density to the highway that we were going to have problems. So that was the other consideration. Those policy objectives were very important and were the underpinning of the decision to proceed with the acceleration of the highway."

[Transcript, p. 843–44]

The Ministry Brief provides a good description of the construction process, the major items of work and the magnitude of the project; it discusses the environmental construction techniques used; and it points out reasons for additional costs, additions to contracts, and problems encountered which could not have been anticipated. None of these need be repeated here beyond a description of what the project entailed, sufficient for an examination of the scheduling, organization, design and contracting for the work.

Scheduling

In 1977 after the project was announced in the Throne Speech a simplistic bar chart schedule was drawn up. This schedule was entered as an exhibit to the Inquiry and showed an attempt to balance work on northern and southern parts of the route and provide for a fairly even level of annual expenditure and flow of work to the roadbuilding industry. This schedule was not followed in the contracts let in the following years. No other documentary evidence of a formal schedule was provided to the Inquiry.

Once the fast-track decision was made, in May 1984, all available design consultants were immediately put under contract to the Ministry, while construction contracts were put to tender as quickly as they could be prepared.

When the Inquiry began, there was some confusion over the length of the fast-track construction period. This had been described as a twenty month schedule. However, in the course of investigation, the fact emerged that the four months spent from May to August 1984 in tendering, mobilization, and project start-up had been ignored in this.

Thus, by September 1984, when Cabinet's May 1984 decision to build the Coquihalla for EXPO was made known to the public, many contractors were already on the site, and over the next six months, all of the grade construction contracts were let.

The Ministry's Assistant Deputy Minister, Operations, Mr. Elston outlined what measures were taken to compress the eight year schedule by a factor of four — into 24 months.

"MR. ELSTON: A: Fast-tracking is used now and then in the highway business. It consists essentially of overlapping some of the design process with the construction phase so that you go to tender with documents that are less than fully polished and problems less than fully addressed with the intention of addressing them during the construction phase.

Other things you do are, as we did in this case, we did some clearing and grubbing in advance of some of the projects. We crushed for the contractors

at various pits with other crushing contracts. We did some stream work, some of the stream diversions which have to be done in a very short environmental window, a certain time of year, between steelhead runs and between salmon runs and things of that sort.

We did some of those by day labour in order to get them in in advance of the contracts. We purchased a lot of material that normally the contractor purchases, and did that at an early stage in the design, with the intention that of course the differences from the design to the final use would even out during the course of a large project, which turned out to be the case."

[Transcript p. 471–2]

The Commission investigated what measures the Ministry had taken to formally and explicitly schedule this immense volume of work as there were many complexities and constraints to overcome. The narrow valley is interrupted with ravines, debris and avalanche tracks, pipelines, and the Coquihalla River, which itself was subject to the limitations of environmental 'time windows' for construction. The fact emerged that the Ministry had no overall formal schedule prior to the letting of contracts. The Ministry made modifications to its contract documents designed to give the Ministry better control of the construction process as it went ahead. These changes to the contracts are referenced in the Ministry Brief and were referred to in the evidence of the Ministry's former Executive Director of Construction, Mr. Norm Zapf:

"MR. MACINTOSH: Q: All right, and the next question is, were there other things done to accommodate fast-tracking. . .

MR. ZAPF: A: Yes, we did do some other things. We first of all looked at the contract itself and we changed the wording of the bond whereby the Ministry had the right to determine how the work would be finished in the event of a default and had the right to take the work over and do it itself if it was necessary.

. . . we put an additional clause into our contract documents which made it mandatory for the contractors to submit a schedule in much more detail than we would normally have in the ordinary projects, which would include such things as all of their equipment, both in numbers and type, and their anticipated production, their sequences of events, their allowances for inclement weather and so on.

The approval of that by the Engineer . . . was mandatory and the award was contingent upon that approval. Also in that clause we included a statement whereby if a contractor's project was lagging or delaying we gave the contractor an opportunity to give us a proposal to rectify that situation and if he didn't give us a proposal we would impose one, and in either case he had to respond immediately at no extra cost to the Ministry.

[Transcript, p. 479–80]

During the course of construction, the separate Branches of the Ministry each monitored progress of the work for which it was responsible, and prepared separate monthly progress and completion records. The Ministry provided no documentary or other evidence of a comprehensive progress monitoring and reporting system for the total project.

Management Organization — Design and Construction

In any major project it is important to coordinate design and construction activities in order that the work is properly scheduled, that the overall design philosophy is carried through in construction, and so that any changes in the field can utilize the knowledge and study undertaken by the designers.

The organization charts reproduced in the Ministry Brief at pages 23–24 show the

Coquihalla project organization was fragmented. This is true in that design and construction activities were separated, and bridge construction was separated from grade construction and paving. Equally importantly, the coordination between these key areas was lacking. The only position where all of these functions came together was the Assistant Deputy Minister, Operations. From the Brief, he would appear to be, in effect, the Project Manager responsible for design, construction and the coordination between the two. This is an impossible task considering the already heavy responsibilities of his position in the overall management of the Ministry, and in the scope and complexity of the Coquihalla project.

The project design and construction organization charts are reproduced from the Ministry Brief as Appendix H-12 and H-13. From the design organization chart, two deficiencies were noted. First, within the project design team, an imbalance of reporting levels existed, by which the senior staff of the Bridge and Paving Branches appear to have been made subordinate to more junior members of the Design Branch. Secondly, in an interview with Commission staff, Mr. Tom Johnson, who was the Assistant Deputy Minister, Operations until the end of 1985, wished to clarify the impression given by the organization chart in the Brief. He described the project management which was put in place during the design phase as follows:

> "MR. MACINTOSH Q: Does that modify the design chart in [Appendix H-12] or is that reflected on that chart? . . .
>
> MR. TOM JOHNSON A: In fact the reporting relationship of that group also had a direct reporting relationship to myself as the Assistant Deputy Minister and that hasn't been shown on the brief."

And further:

> "MR. TOM JOHNSON A: The reason for having it report to me was . . . . to give the design team the authority to function the way in which they had expected them to function, and they were carefully chosen as people who did not require a lot of day-to-day technical supervision."

The project organization for the construction phase is shown in Appendix H-13 from the Ministry Brief. In considering the coordination of construction activity, Mr. Robert Tribe gave evidence on this when he stated:

> "MR. TRIBE: A. . . . . first of all there's no one singularly in charge until you get up very senior within the ministry staff. The construction is divided, although we hear the term Executive Director Construction, he is Executive Director Construction, grading and paving, ... but Bridge Construction is in fact separate"
>
> [Transcript p. 640]

And further:

> "MR. MACINTOSH: Q: And so what's right or wrong with that?
>
> MR. TRIBE: A: Well, first of all I believe the construction should all be reporting to one person so it can be coordinated and the decision process certainly can be expedited. I've heard from the Ministry that they ran a very informal shop and that they did have good communication at that level, but also in speaking with some of the people who had dealings with the field we had this very strong feeling that decisions came from the field to Victoria, crossed the boundaries of Victoria and went back to the field, and we certainly had some discussions with respect to the problems on the Great Bear Snow Shed where there was a problem of site availability for a bridge contractor."
>
> [Transcript, p. 640–41]

Considering these deficiencies, the submission received from Mr. V.P.G. von Maydell, P.Eng. comes as no surprise. The

introduction to his brief is as follows:

> I provided services for the Coquihalla Highway and suffered financially. I am thus not an unduly enthusiastic bystander and my comments may thus be considered as reasonably objective where they are positive and, hopefully, equally founded on objectivity where critical.
>
> [von Maydell, p. 1]

Then Mr. von Maydell, in specific reference to the work on which he was engaged, goes on to say:

> In fact, chaos seemed to reign: the General Contractor had no communication with either of the adjoining road contractors, despite an apparent effort to this effect. There was no co-operation with respect to timely preparation of rock for construction of abutments and Inspectors of the Ministry were not able to help. Without access to abutments, erection was unduly complicated and expensive.
>
> [von Maydell, p. 1]

The Ministry has recognized these deficiencies, both in the Brief to the Commission and in testimony to the October 20th hearing when Mr. Illing, then Deputy Minister, stated with reference to the management of future work:

> "MR. ILLING: A. The second thing, and a very, very important point in my view, is a totally integrated approach to project management of large projects. The Ministry, principally I think, because of the close working relationship that's existed for many years between many competent staff and the style of management has not operated with a one person project management direction on major projects. I believe, and I know that Mr. Elston and Mr. Limacher believe, because we have had extensive discussions on it, that this is not only desirable, it's mandatory for future management of major projects. And that means that early on in the game somebody will be responsible for all aspects of the project, the estimates and achieving of the cost."
>
> [Transcript, p. 564–5]

And further, in direct reference to the Coquihalla,

> "MR. ILLING: A. It was not easy or, indeed, possible to identify one person who was totally accountable for the project, other than perhaps the Deputy Minister who, of course, has many other things to do."
>
> [Transcript, p. 565]

Mr. Illing also pointed to the lack of financial staff involvement in project management:

> Mr. MACINTOSH: Q: Yes. Could you turn please, in that regard, sir, to page 24 in the Ministry's Brief . . . . entitled, "Coquihalla Highway Project, Construction Organizational Chart." And does that highlight your concern in the sense that we have Executive Director, Construction and Executive Director, Engineering, both reporting to the ADM Operations?
>
> MR. ILLING: A: Yes, and that would illustrate part of my concern or part of the situation. And of course, not included on this chart which [if] you were trying to reflect true project management would be financial input into the management of the project, financial staffing."
>
> [Transcript, p. 565–6]

Design

The process of putting contractors to work in the field begins with engineering design. This takes knowledge of the site conditions obtained from air photos, geotechnical field work, on-the-ground surveys, and combines it with the design standards for the highway to produce detailed drawings (plans, cross-sections,

profiles, and other details) showing the alignment, the extent and type of excavation in "cuts" and "fills", gravel quantities and haulage distances, paving specifications, through to drainage design and laning. Detailed designs are also prepared for bridges and structures which will form part of the final highway.

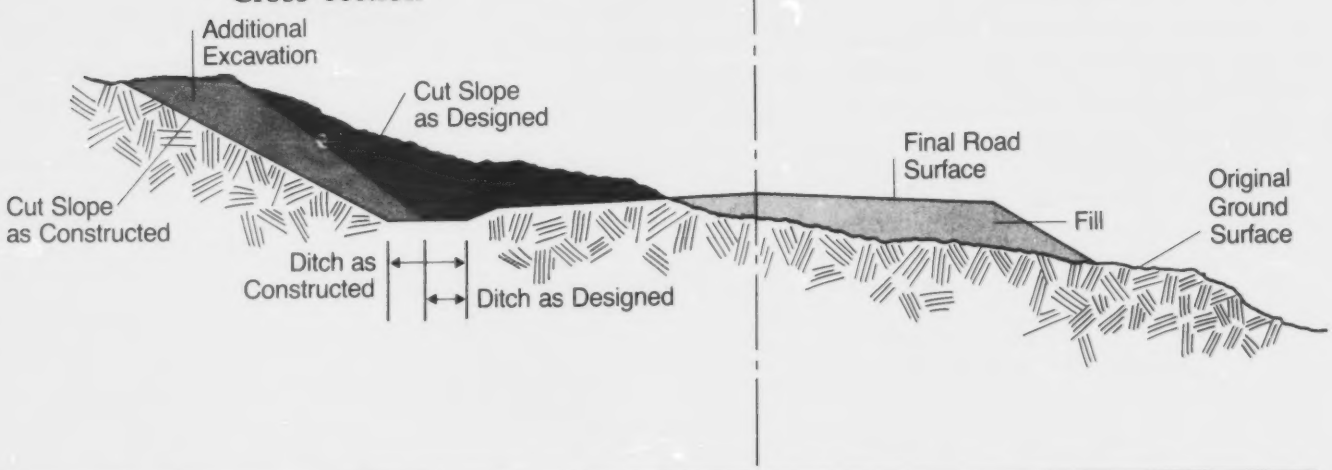
In developing a highway alignment the Ministry attempts to make a 'balanced' design. Figure 5 shows this, indicating how the amounts of materials in cuts and fills are balanced, to result in no net shortage or surplus of material. There are, of course, exceptions to this, such as when material is known beforehand to be unsuitable for fill or some other reason. The theoretical cut and fill quantities in the balanced design are then calculated from profiles and cross sections on the basis of expected slope stability. The angles of the slopes chosen for the cuts and fills vary for different materials. But in preparing designs, the Ministry specifies a conservative slope — conservative in the sense that it is the steepest slope at which the material is expected to stand safely and which therefore requires the minimum amounts of cut and fill to be moved. If field conditions require it, the slope will be adjusted from this conservative initial angle. This is also shown in Figure 5, together with the additional volumes of cut material resulting from a need to move away from the conservative initial design and 'lay back' the angle of the slope.

Contract Documents

Based on the designers' work, contracts are prepared. In order to allow a wide range of contracting companies to make bids, the Ministry ensured for the Coquihalla that the work was 'parcelled out' in contracts of about $6 million. Larger contracts would have meant that smaller companies would be unable to raise the necessary performance bond to be eligible to bid. On the other hand, smaller contracts would add to the complexities of scheduling and administration.

All contracts are Unit Price Contracts, which means that the different items of work calculated in the designs are separately specified in the Ministry's documents and separately bid by contractors. For grade construction there

Fig. 5
Typical Coquihalla Highway Cross-section



may be as many as fifty bid items.

The Ministry also provides a Schedule of Approximate Quantities to all contractors bidding on a contract. Contractors, in submitting a bid, quote a price per unit for each item of work specified. Thus, for example, the contractor gives his bid price per cubic metre of rock, per tonne of gravel, per metre of culvert, etc. These Unit Prices are then multiplied by the quantities estimated in the Schedule of Approximate Quantities to produce an 'extended price' for each item of work. Upon receipt of tenders, the extended prices are totalled and the contractor submitting the lowest total is determined and a contract awarded accordingly.

Changes in Contracts During Construction

During the Coquihalla Highway construction there were major changes in both the site conditions and the kinds and amounts of material to be moved under the grade construction contracts. Similarly, the bridge construction contracts required changes; the most substantial were on the Great Bear Snow Shed and the Ladner Creek Bridge.

As noted before, to manage the fast-tracking of this project, the Ministry made changes in the Unit Price Contracts to give it greater control over scheduling. However this did not address some major deficiencies in the documents, particularly in reference to the management and payment of extra work. Mr. Tribe's evidence speaks to the need to revise the Ministry's documentation and that subject will be covered more fully in Chapter 6 — Practices and Procedures — but the following section treats the subject of extra work, how it is ordered and how it is paid, and some of the problems it created on the Coquihalla Highway construction.

Changes in work and the need for extra work are to be expected in any construction project. This is particularly true in a fast-track project where the designs are less polished, where many contractors are involved, and where all of the work is being accelerated; if this work involves excavation and earth moving, substantial quantities of extra work are to be expected. Accordingly, there needs to be a method to order the work, to pay for the work, and finally to settle accounts with the contractor. The Ministry handles these changes in two ways: Extra Work Orders and Unit Price Letters. Experience with the Coquihalla project showed contract provisions and procedures for both to have important deficencies.

Extra work is often ordered in the field to meet urgent job conditions and cannot wait for a formal approval. Once ordered, the work has to be paid for. The Ministry's process requires formal approval of an Extra Work Order before any payment can be made and from the evidence appears, as a general policy, to require the amount to be agreed beforehand. Evidence came forward to the effect that approval and payment often occurred months after the work was finished. This was explained by reference to the fact that Extra Work Orders are also used as a means to pay claims which arise after the work is finished. However, it also became evident that the system was not responsive to the requirements for prompt payment to contractors on fast-moving construction projects where extra work can amount to hundreds of thousands of dollars in any one month.

To authorize work not included in the contract and capable of being defined by a unit price and quantity, a Unit Price Letter is issued by the Ministry. This process requires, after the need for the work is defined, a request for a quotation from the contractor, a quotation from the contractor, review within the Ministry, and approval by at least an Executive Director — all of which takes time. Once a unit price negotiated through a Unit Price Letter has been approved, it is dealt with in the same manner as the unit price bid in the original tender and is subject to a monthly progress payment.

The deficiencies in the contract

documents and procedure for authorizing and paying for extra work came to the fore in the contracts for the Great Bear Snow Shed and the Ladner Creek Bridge. Both were contracts for major structures. Both were fraught with major problems — problems of site conditions, problems of scheduling, problems of material and problems of weather. And both attracted significant extra costs for work or conditions not included in the original contracts.

The Great Bear Snow Shed has been the focus of attention in questions in the Legislature, in stories in the media and in briefs to the Inquiry. Accordingly, it was investigated in detail by the Commission's accounting advisor and was the subject of testimony at the Commission's hearing.

The following section discusses construction of the Great Bear Snow Shed.

It should be noted here that although there has been much discussion and controversy about the Great Bear Snow Shed contract, evidence is that there were eight other construction contracts on the Coquihalla Highway — Hope–Merritt that had greater overruns — both as a percentage of tender amount and absolute dollars.

Great Bear Snow Shed

The Great Bear Snow Shed is a structure to protect the highway from avalanche and is described in the Ministry Brief as follows:

> Great Bear Snow Shed is on the Coquihalla Highway 44 kilometres east of Hope. It is 280 metres long, 30 metres wide and accommodates six lanes of traffic. The rear wall is built into the slope and is designed as a retaining wall, anchored to rock where sound rock is available, and elsewhere as an earth anchor wall. Columns and beams are of precast concrete and the footings, rear wall, anchor wall and portals are of poured-in-place concrete.
>
> [Ministry Brief, p. 39]

The contract price for the snow shed was $5,524,672 with the final amount paid the contractor $10,501,689. The structure was designed by an engineering consultant experienced in snow shed design. The contract was administered by the Ministry's Bridge Branch, with the consultant providing field supervision.

There were many reasons for the large amount of additional payment, but the most important was that the site was not available to the contractor on the date stipulated in the contract. Evidence to the Inquiry was that while the contract provided for the site to be delivered to the contractor by June 30, 1985, at that date it was not possible to start anywhere on the site. On approximately July 16 it was possible for work to start on a portion of the site, but the contractor did not have the entire site at his disposal until approximately August 20th or slightly thereafter. In addition, rock conditions on the site were not as anticipated which caused considerable increase in rock excavation and in scaling and trimming the unstable slopes above the site. Late delivery of the site caused a large amount of the work to be done during harsh winter conditions to meet the completion date of November 30, 1985.

The Ministry Brief lists the additional cost items under a number of headings in round numbers as follows:

Additional items ordered by Engineer (electrical enclosure, siloxane roadway sealant rather than linseed oil)	$136,000
Extra costs due to site conditions (mainly because rock was poor; this led to increased quantities of rock excavation, backfill, footings, anchor walls and tie beams. Unstable slopes above site required scaling and trimming)	$840,000
Extra costs for bringing gravel from Juliet Pit (rather than Dewdney Pit)	$461,000
Increased labour costs (initially because of having access to only part of the site and later because of winter conditions)	$1,020,000
Other extra costs of winter work (snow removal, heating and hoarding of concrete, extra costs of a cold-weather grout, etc.)	$1,182,000

Extra costs of rescheduling work (Costs arose because of late access to site. Included double-handling of precast concrete components, acceleration of some works, placement of fill on roof to make shed safe over winter and removal of fill in spring)	$827,000
Extra costs because of extended job duration (site overhead, rental of concrete plant and formwork)	$523,000
Interest	$120,000

[Ministry Brief, p. 42]

The Ministry made the decision to award the contract on June 17, 1985 with the official date of the award being June 21. The contract required completion by November 30, 1985. It is unclear whether at that time the Ministry actually knew that the site would not be available on June 30th, but there is evidence of concern even before the tenders were advertised that the site would not be available. On May 15th, the consultants wrote the Ministry advising of their understanding that ". . . as yet no work has commenced on the site regarding construction of the roadbed. . . . there is a likelihood that the site will not be ready by June 15, 1985. . . . we have concern that the specified completion date, November 30, 1985 may not be met. . . ."

The Ministry, through its Construction Branch, who were responsible for adjacent grade construction contracts and site preparation for the snow shed, reaffirmed that the site would be ready by June 15. However, the Bridge Branch was still concerned as evidenced by the testimony of its Director, Mr. Len Johnson:

"MR. MACINTOSH: Q: Yes, you were satisfied then that this fear in the consulting engineers was probably unfounded?

MR. LEN JOHNSON: A: No, I was concerned, I think a good many people were concerned but the ministry wanted to forge ahead, and I imagine that they thought the contractor could accelerate somewhat in spite of the delay and have it completed by November 15th."

[Transcript, p. 357]

In any event the site was not ready. The files are full of correspondence and memoranda through July and August 1985 between the Ministry, the consultants and the contractor regarding site availability and scheduling of the work. As late as August 27 the contractor complained ". . . still problems with the site . . ." and ". . . the Construction Branch still have work to do . . .".

On August 28 the contractor advised ". . . substantial costs will be incurred by our firm to complete the project due to working under acceleration and winter conditions such as premiums on labour, equipment, cost of heat, etc. . .".

Predictably in September 1985 the claims started coming in. During all of this period and continuing to the completion of the contract, the work was monitored. There are records of men and equipment on the site and apparently authorizations, in one form or another, were given for all of the costs incurred and all of the work which was done. However, the Ministry was incapable of processing the claims for payment.

In evidence Mr. Len Johnson stated:

"MR. LEN JOHNSON: As I outlined earlier it seems to be a policy in the bridge branch to do extra work orders after the fact. Now, speaking back on the question that you addressed to Mr. Zapf about the amount, it was impossible, for sake of argument, for us to determine the cost of snow removal and prepare an extra work order. If we'd put down $100,000 we would have had to go back for more and another extra work order and another extra work order. It depended on how long, how much snow was going to fall."

[Transcript, p. 353]

And again:

"THE CHAIRMAN: Looking at the extra work amounts would it be fair to say that bridge branch isn't used to dealing with a large volume of extra work?

MR. JOHNSON: That is correct.

THE CHAIRMAN: And that you weren't really used to the Unit Price Letter system that the [construction] grading people use?

MR. JOHNSON: A: That is correct. We've never had a project that started off on the wrong foot like this one did."

[Transcript, p. 417–18]

In the meantime the contractor demanded his money. He was being paid on a monthly basis for only the work in his original contract at the originally bid unit prices, and he was not being paid for his extra costs. By mid-October the claims were in the order of $1 million and as Mr. Len Johnson testified:

"MR. LEN JOHNSON: . . . In September, the end of September the progress estimates, the invoices for extra work started arriving and soon after that there was a deluge of them and once a week, I would say, there were phone calls from Kerkhoff Construction, 'When are we going to get paid for all the extra work we've done? We have commitments. We have payroll to meet. . .'

[Transcript, p. 361]

It was then that the Bridge Branch, faced with an unfamiliar situation, under extreme pressure from the contractor and from the demands to continue with the work, took an unusual and unfortunate step which was discovered by the Commission's accounting advisor in his detailed review of the Ministry's files. As Mr. Len Johnson, Director of the Bridge Branch testified:

"MR. LEN JOHNSON: . . . In an extreme measure the branch processed an extra work — processed a progress estimate with some of the quantities in excess of what had actually been performed. This was signed by a branch official on the understanding that this payment was for work that the contractor had actually performed. It was something that the branch has never done before, and I imagine it will never do again, but I think that is what they're referring to, the over-progress."

[Transcript, p. 361]

And Mr. Lyall, Bridge Construction Engineer in the Ministry:

"MR. MACINTOSH: Q: All right, and what Estimate 4 did, I don't believe I have it here, but I'm not sure that it matters, what Estimate 4 did, it was changed within the ministry, Mr. Lyall, to create a larger payment, is that right?

MR. LYALL: A: That's correct.

MR. MACINTOSH: Q: And it was to create a payment for work that hadn't been done per the description on the document.

MR. LYALL: A: That's correct."

[Transcript, p. 365]

This action was clearly contrary to the intent of Section 29 of the *Financial Administration Act* which provides, that:

"That no payment shall be made out of an appropriation or a trust fund for the performance of work, the supply of goods, the rendering of services, or for any other purpose, whether or not under an agreement, unless a certificate is given by a person referred to in Section 28(4),

(a) that the work has been performed according to the agreement . . . or

(b) "where a payment is to be made before the completion of work . . . that the payment is in accordance with the agreement."

However, the Commission is satisfied that at no time did these increased progress payments pay to the contractor more than the value of the work which had been done by the contractor on the site, nor were the changed progress estimates

done in secret. There are memos and letters in the file documenting what was being done and why, and the choice of items to be paid for were such that they could not help but reveal to an experienced observer that the work being paid for could not have been done at the time indicated on the progress estimate.

As Mr. Hooper testified:

> "MR. MACINTOSH: Q: All right, but at the end of the day, as you say, you looked through all that and you were satisfied that whether it was done rightly or wrongly, it was done for what I might call the right purposes.
>
> MR. HOOPER: A: That's right. It was adjusted at the end and everything came out right at the end."
>
> [Transcript, p. 602]

By these observations the Commission is not condoning the actions of those involved but does conclude that the people were corrupted by a system that was inappropriate for the job to be done. A system cannot be condemned too strongly that leads otherwise honest men to resort to such means in order to do their jobs.

The final resolution of all of the extra work on the Great Bear Snow Shed contract did not come until early 1987 — a year after completion of the structure. Throughout 1986 the contractor's invoices were reviewed in great detail and attempts were made to negotiate a settlement. As late as October 15, 1986 the contractor listed unsettled items under 19 main headings including 33 individual items.

Not all of the fault of course was with the Ministry, but as Mr. Ian Rokeby, P.Eng. who acted as the consultant's representative in supervising the project testified:

> "MR. ROKEBY: A: Well I think I should preface my remarks by pointing out, basically reinforcing what Mr. [L.] Johnson has said and that is that of the projects I've been on I've never experienced one with this amount of extra work relative to the basic contract values. So I think the sheer volume of paper in this case is something that I don't think you'd ever experience again, I certainly hope not. However, I think it's fair to say that a continual, I think part of the problem contributed to the delays in this case as well as the volume of paper was the slowness of the contractor in documenting some of his claims. I think that if more emphasis was put to the contractor of invoicing promptly that it would be much easier, it would have been much simpler for the Ministry to have dealt with those things.
>
> We've made reference to delays in paying invoices that have been submitted and it wasn't that they weren't being worked on, that they weren't being processed, it was that in virtually all cases, there were exceptions but in virtually all cases when invoices were initially received from the contractor there was not sufficient documentation, substantiation so that those could be responsibly paid at that point. I think that it might be, I know that numerous letters were sent to this contractor stressing the standards that were required of documentation of his costs and so and the occasions upon which the work had been done. There was some improvement but I think that perhaps a clear statement of exactly what standards of documentation would be required might be of some help under similar circumstances again.
>
> THE CHAIRMAN: You're talking about some clearer statement in the tender documents about how a claim is to be —
>
> MR. ROKEBY: A: Substantiated, yes.
>
> THE CHAIRMAN: And how it will be paid and how it will be processed.
>
> MR. ROKEBY: A: Correct."
>
> [Transcript, p. 418–20]

A similar situation including progress estimate changes occurred in the contract for the Ladner Creek Bridge as detailed in Mr. Hooper's report (Appendix E). Again this was a major structure where

substantial changes in site conditions occurred, and the ministry was faced with large additional costs and no appropriate method of arranging payments to the contractor.

These two structures had major changes which caused problems to the Bridge Branch. Although other structures such as the Dry Gulch Bridge and the Ottomite Bridges had serious scheduling and other problems, the two mentioned were the most serious in regard to extra work and in paying the contractors.

Remedial Work

The Ministry Brief noted that in any major highway constructed through new terrain there is a period of "extraordinary" maintenance. This is because of the need to stabilize slopes, correct for settlements in embankments, install drainage works, etc.

The Brief describes some of the specific remedial work on the Coquihalla Highway but did not include its cost. In reponse to the Inquiry's Information Request, the Ministry provided on Dec. 2, 1987, the details and costs of this work as follows:

Work done since May 16, 1986 can be broken down into two categories:

1)	Maintenance	
	Larson Hill area slope stabilization, riprap, and rebuilding part of a fill slope	$30,000
	Great Bear Snow shed repairs to drainage structures and addition of a cornice preventing roof on the portal walls	$90,000
	Dry Gulch Bridge additional rock stabilization as recommended by post construction geotechnical investigation	$190,000
	Paving (see attached memo)	$3,002,000
2)	Completion and Aesthetics	
	Larson Hill Area new cattle paths added	$4,000
	Heritage Signs provides public with greater appreciation of the work of the pioneers	$42,000
	Kettle Valley R/R Station Signs showing approximate location of former train stations	$12,000
	Highway Rest Areas at Zopkios and Brittan Creek provides washrooms, telephone and emergency waiting area	$600,000
	Revegetation of Coho Rearing Ponds provides bank stabilization and shade for fry	$40,000
	Revegetation of Avalanche Paths stabilizes paths to keep rock portion of avalanches to a minimum	$20,000
	Totals	
	Maintenance	12,000
	Completion and Aesthetics	718,000
	Post Construction Work	**$4,030,000**

These remedial works are of modest cost except for the paving costing $3,002,000.

The Ministry advises that it should be noted ". . . pavement construction of the Coquihalla was undertaken with specific intent of providing additional leveling/ strengthening in future . . .".

Some of the embankment settlements in the Coldwater area which have been repaired by repaving are quite severe and may well be the result of accelerated construction. However, considering that the original pavement construction was undertaken with the intent of providing additional leveling and that the work would have been done in the future in any event the cost that could be attributed to fast-tracking is small.

Grade Construction: Contract Changes

The largest portion of work and the major single cost of the highway is represented by the grade construction contracts. Building the Coquihalla Hope–Merritt required 23 individual main highway grade construction contracts with a final cost in excess of $200 million. There were also six major paving contracts with a value of over $15 million. Both of the latter kinds of work are administered by the

Construction Branch. As noted earlier, the separation of engineering design from construction is an undesirable feature which magnified the problems of a large project with a highly compressed time schedule. On normal projects where designs are more complete before the project goes to construction, the potential problem areas are diminished, but even then close coordination between design and knowledgeable construction people is valuable.

There are numerous examples on the Coquihalla grade construction where major changes were required in the field. The Commission believes that some of these situations might well have been avoided if the Ministry's construction expertise had been more involved in the detailed design process. Similarly, few design changes made during construction were referred back to the designers. As a result, the changes were made without the benefit of full knowledge of the overall design requirements.

Grade construction contracts are prepared as described earlier as unit price contracts. On the Coquihalla highway, the total tendered amount for the main highway grade construction contracts was approximately $120 million, with total final payments under these same contracts amounting to approximately $203 million. There are explanations for these differences. To understand them requires a knowledge of unit price contracts and the Ministry's practices and procedures in administering them.

As noted before, unit price contracts are prepared with theoretically estimated quantities and awarded on that basis. The selected contractor then enters the site and begins his work. In making up the contracts, the designer will have made assumptions about the type, location and quantities of rock, the moisture content of earth, the gravel quantities needed and available. If all these assumptions were to prove correct, then the quantity of material handled by the contractor and the other units of work would be identical to the estimate, and thus payment would be identical to the bid.

However, when excavation begins it is almost certain that conditions in the field will not be identical to those assumed by the designer: rock elevations will probably be different; earth material may be less stable than assumed or may even be unsuitable for fill because of moisture content or some other reason; drainage and other requirements will very likely be different, too. Dealing with these differences from the assumed design requires field decisions in such matters as slope stability, material to be wasted, amounts of surface gravel, rock slope stabilization, etc. All these tend to increase the quantities and thus the price. The quantities are unlikely to decrease because of the conservative nature of design and the fact that the slope's stability, as assumed, results in the steepest slopes that are acceptable.

In adopting a conservative design, the Ministry's strategy is sound, as the work above and beyond the design quantities remains firmly within the Ministry's control.

However, the estimated quantities should be adjusted so that actual field conditions are better anticipated. More geotechnical work would obviously be of assistance here. But even without more geotechnical work this can be accomplished, in most cases, by a more complete and thorough review of the estimated quantities by experienced and knowledgeable construction personnel. Construction personnel, along with the designers, can make an objective review of areas of risk and adjust the estimated quantities accordingly.

To use only theoretical quantities invites large quantity overruns and opens the door to unbalanced bidding. It can also lead to negotiations of significant amounts of work and in effect remove the work from the competitive bidding process.

The implications of the design strategy and contracting strategy for the Coquihalla contracts are outlined below. This subject is discussed in more general terms in Chapter 6.

Contract Changes: Implications

Figure 6 shows the changes between tendered and final prices for Coquihalla grade construction and bridge construction contracts. As noted before, there were significant problems and extra work on two bridge structures, the Ladner Creek Bridge and the Great Bear Snow Shed. The bridge construction contracts are thus shown on the graph in total and with the Ladner Creek Bridge and the Great Bear Snow Shed removed from the total amounts.

Looking at the grade construction contracts alone, the amount of work authorized by Unit Price Letters and Extra Work Orders work is approximately $77 million, which is nearly 65% of the original tendered prices.

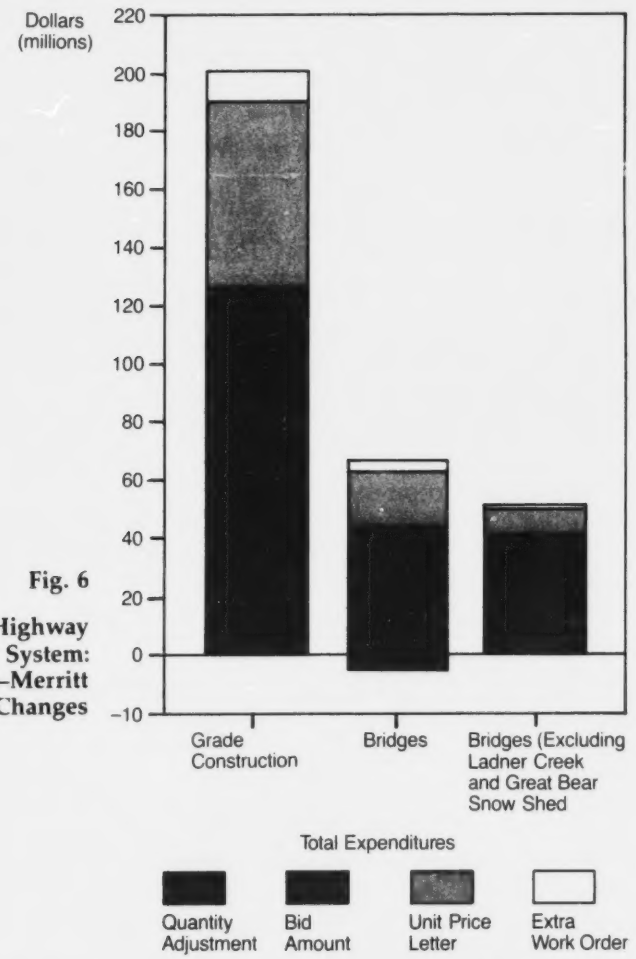


Fig. 6
Coquihalla Highway System: Hope–Merritt Contract Changes

This matter was referred to in the evidence by both Mr. Zapf, the Ministry's Executive Director of Construction, and by Mr. Tribe, the Commission's Engineering advisor. Both produced figures of the total cost of the work done through grade construction contracts but differed slightly in the total amount. This difference is because Mr. Zapf included contracts for gravel crushing, quarrying, construction of the toll both plaza, and some other items which Mr. Tribe had not. This is a minor point because it would change totals in any subsequent calculations by substantially the same amount. However, an important item of difference is the amount of negotiated or non-tendered work. Mr. Zapf in his presentation arrived at $35.2 million for work done under Unit Price Letters whereas Mr. Tribe arrived at $64.2 million as the value of this work. This difference has arisen because Mr. Zapf assumed that where a unit price changed, only the difference between the original unit price and the changed unit price was to be considered as unit price letter work. By contrast, Mr. Tribe had assumed that once a unit price was re-negotiated, all of the work done under the new unit price was considered as unit price letter work.

The Commission subscribes to Mr. Tribe's viewpoint, that is to say, that once a bid unit is 'opened up' for re-negotiation then it is more realistic to consider that the value of the entire item has been re-negotiated and not just the difference.

The contract "growth" is illustrated by Figure 7 which shows in graphic form for all Hope-Merritt contracts, the breakdown of amounts competitively bid under the Ministry's contracts, negotiated under Unit Price Letters, and done on a cost-plus-20% basis through Extra Work Orders.

This breakdown indicates that about 40% of the contracted work was done outside of the competitive tender process. Mr. Tribe discussed this and the potential consequences at some length in his

evidence, addressing first the contract documents as follows:

"MR. TRIBE: A: And as I said before, it tended to destroy the unit pricing concept or its original intentions because most of the work then really moved out of that environment and in fact was on a negotiated basis. I believe that there's no doubt that with a little more scrutiny of the contract documents before they went out and perhaps maybe with a little more geotechnical investigation at the front end the documents could have been more complete. Some of the areas I speak of are areas where maybe the construction input would have been a lot better at the front of the project. Other areas, there was some discussion yesterday I believe that you initiated about if you're always 20 per cent under in quantities why not increase it by 20 per cent.

I don't think that is correct but certainly you can review your risk areas where quantities might increase and make a better allowance for them. For instance if you're in a rock slope and there's a suspicion there might be other than theoretical sloping then that should be taken into consideration. Other areas that could have been taken into consideration or where there's risk is putting in some provisional allowances or some other mechanism to at least recognize that scope within the contract. So I believe there are ways of preparing a more complete and more appropriate contract document for these areas, but again, in fairness to the ministry, these contracts were an exception to the — when I say these contracts, a project of this magnitude is an exception to them, it was fast-tracked, there's a lot of extenuating circumstances that say why the situation happened."

[Transcript, p. 647–8]

And further,

"MR. MACINTOSH: Q: . . . What does one hope to do in the future to avoid that kind of circumstance?

MR. TRIBE: A: You can never have 100 per cent assurance against these things, and they will crop up occasionally. Obviously the problem here on the Coquihalla is the frequency of this, and it goes back to the completeness of the documents when you go out [to tender], and the process has to be there to move to a more complete contract document which is more representative of the final work and you can stay within it."

[Transcript, p. 653–4]

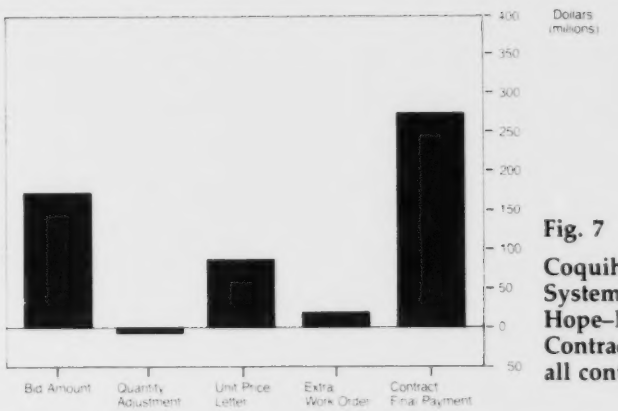


Fig. 7

Coquihalla Highway System: Hope–Merritt Contract Changes — all contracts

And then Mr. Tribe discussed the risk areas in regard to cost in the following evidence; and in reference to one of the Coquihalla grade construction contracts:

"MR. TRIBE: A: Well, I picked this contract in particular. It had substantial growth, and I'm not analyzing it from the point of view of saying what they did is incorrect or not, I'm analyzing it from the point of view of what can growth do with respect to moving it from a competitive environment to a negotiated environment, what is the potential for discretionary expenditure in there that might have been covered better under a competitive environment."

[Transcript, p. 648]

And later,

". . . Now, that's the basis of how it got

to where it was. That whole scenario accounted for, when I say accounted for, was the prime mover in the costs being extended by approximately another $12 million. Now, of that $12 million, what I would like to do is point out that approximately $5 million of that in my opinion can be classified as discretionary and might have been subject to a more competitive pricing arrangement if it had been done in a competitive environment.

The main thing is, in reviewing this, and keeping in mind the contractor does have a little bit of an upper hand, the general trend is, is where the contractor was short on his unit prices he got a renegotiated price and where there was some fat it stayed as was. . . .

. . . So we have a whole series of items. In fact when you review this whole contract, the whole contract went beyond the plus or minus 20 per cent. I'm not sure if there's one bid item that stayed within it, yet the only units that were renegotiated were those where the contractor was short.

MR. MACINTOSH: Q: Where he was low at the start?

MR. TRIBE: A: Where he was low to start. And I might, I'm the great clairvoyant here obviously, but, and I understand it's tough to go back and get a contractor to give you something where he's making money, but it shows the exposure that you put yourself to.

MR. MACINTOSH: Q: When what?

MR. TRIBE: A: When the contract breaks significantly from what you've tendered; in other words when you're into a negotiating process after the contract has been awarded. . . ."

[Transcript, p. 650–2]

Mr. Tribe then went on to give evidence as to his opinion of the effect of these things on the overall cost of the project which he related to the cost of fast-tracking. Mr. Tribe's final evidence on this point was:

"MR. MACINTOSH: Q: Right; you're saying that part of that non-bid component on grading for Phase 1 you attribute to fast-tracking?

MR. TRIBE: A: That is correct.

MR. MACINTOSH: Q: You say that even recognizing that the quantities that were ultimately moved for grading on Phase 1 probably were the same at the end of the day whether it had been done slowly or done quickly?

MR. TRIBE: A: That is correct.

MR. MACINTOSH: Q: Why is that?

MR. TRIBE: A: It's simply because you are moving into a non-competitive environment, obtaining a price for certain items to be done. That in itself will attract a higher cost, and it doesn't matter how vigilant the ministry is, and I understand they're very tough in negotiating these things, and I think they probably contained these costs a lot more than maybe might have happened in another environment.

MR. MACINTOSH: Q: You mean had they not been as good at negotiating?

MR. TRIBE: A: Yes."

[Transcript, p. 655–6]

Cost of Fast-tracking

Fast-tracking a project has identifiable costs and benefits. Some of these are easily quantifiable while others are more general, but no less real.

That there were clearly-sought benefits from the decision to fast-track the Coquihalla is shown both by the Premier's Office news release announcing the project and from Mr. Smith's evidence quoted in Chapter 3.

From the Ministry's evidence, however, it can be seen that there was no explicit estimate of the additional cost represented by fast-tracking at the time the decision was made.

That there were costs involved was also clearly recognized. As the Minister stated

on June 5, 1986, the proceeds of the Coquihalla tolls (estimated to be $20 million per year) would be used to pay for the cost of acceleration.

> HON. MR. FRASER: The toll is installed under government policy to help pay for the carrying charges for the step-up in the construction of the Coquihalla. It was never put on there to pay for the road itself. . . . we estimated $20 million, and I would say that we'll probably hit $20 million a couple years from now. But what we're looking at right now is recovery of $12 million a year based on the first two weeks.
>
> [Hansard, p. 8557]

The Ministry Brief examined this issue and summarized the costs directly attributable to fast-tracking, plus the avoided costs, in the following "balance sheet":

> "Of the $414.7 million spent on Phase I, only $15 million or 3.6 per cent of the total is directly attributable to the accelerated schedule of design and construction. The rest — $400 million — is money that would have been spent in any case to build this facility.
>
> Having noted the cost of fast-tracking, the Commissioner should also note the costs that would have arisen because of *not* fast-tracking. Had Phase I been built on a more normal schedule — over a five-year period, for example — the following costs would have accrued:
>
> — the loss of $12 million/year now being collected in toll revenues
> — the loss of $23 million/year now being saved by highway users in net operating costs
> — the loss of $5 million/year now being saved in accident costs
> — additional costs caused by rising construction rates.
>
> To the balance sheet must be added the undoubted economic benefits of early completion to such communities as Merritt and Kamloops, as well as the obvious advantage of having had the highway in place to handle the tourist traffic generated by Expo 86.
>
> The bottom line on the balance sheet is: while fast-tracking the Coquihalla costs $15 miliion, failure to fast-track would have cost significantly more.
>
> [Ministry Brief, p. 47]

Later, the Ministry provided a revised "Acceleration Cost Summary" giving a detailed list of the costs of fast-tracking totalling approximately $12 million.

The cost of fast-tracking was also covered by Mr. Tribe in his report (Appendix C) where he states:

> "In our opinion, the Ministry have taken a narrow approach in their evaluation of the cost by only identifying specific line items of direct costs, which are not a fair estimation of the total cost of fast-tracking."
>
> By taking a much broader, but informed approach, there is a sound and defensible basis to estimate the actual cost of fast-tracking. In our opinion the proper estimation is in the range of $30–50 million.
>
> [Tribe—Appendix C]

Mr. Tribe then describes the items to be included and summarizes the cost of fast-tracking at $43.7 million.

It is clear that an explicit after-the-fact analysis of the cost of fast-tracking is not practical. Nevertheless an informed opinion is possible. The Commission subscribes to Mr. Tribe's estimate and believes the cost of fast-tracking the Coquihalla Highway, Hope to Merritt was in the range of $40 million, that is to say approximately 10% of the project cost.

There are valid arguments for fast-tracking a project. The Ministry's Brief gives some of these for the Coquihalla. However, the Commission's opinion is that had a proper budgeting and decision-making process been in place, then first, the cost of fast-tracking would have been part of the budget and part of the decision to fast-track, and second, the cost of fast-tracking itself could have been reduced.

The Commission makes these comments not to criticize the way the work was done, as it was carried out within the provisions of the contract documents and procedures that the Ministry was using, but rather the comments are for the purpose of illustrating deficiencies in the documents and to show their inappropriateness for the task at hand. Further discussion and conclusions on this subject will be included in Chapter 6 on Practices and Procedures.

Suffice now to say the construction of the Coquihalla Highway was a remarkable achievement. The fact that the highway — a major, complex and fast-moving construction project — was completed in 24 months using this project management process and the existing contract documents is in the Commission's view close to a miracle. The staff's long experience has been referred to many times in the evidence and is testified to by the final results. Without their experience and dedication the project would never have been completed on time.

Conclusions

The Commission's review of the Coquihalla Highway construction has concluded that the project was commenced without any formal or documented schedule, that the management organization of design, construction and the links between was fragmented, that the design strategy, while sound, was not matched by appropriate methods of estimating quantities and dealing with changes in the field. This led to problems in expeditiously paying contractors and had the effect of removing from the competitive bidding process more than 40% of the hundreds of millions of dollars the project cost in total.

From the above, the Commission further concluded that substantial but unquantifiable additional costs were incurred by the fragmentation of the organizational structure, the incomplete contract document, and the general lack of an overall plan.

CHAPTER 4

Other Projects

Introduction

The terms of reference direct the Commission to inquire with respect to any other recent highway construction projects which appear to have significant differences between the actual and estimated costs.

In response to this direction, the Commission undertook several initiatives. First, to inquire with respect to the Annacis System project which, although confined in its aerial extent, is a project of the same order of cost as the Coquihalla Highway Hope–Merritt and was under construction at the same time.

Second, the Commission examined the Ministry's documentation relating to the Northeast Coal access road which was constructed between 1981 and 1984 on an accelerated program. The Commission inquired only with respect to estimates and final costs for this project.

Finally, the Commission undertook two research projects with respect to all major capital construction undertaken by the ministry since 1980.

As the first of these projects, the Commission's accounting advisor looked in detail at the accounts for fifteen randomly chosen projects from amongst all of the work done by the ministry in that period of time. As the second, the Commission's Research Engineer compiled computerized datafiles for capital construction contracts over $1 million since 1980. This provided a base of information describing the Ministry's normal work and allowing comparison with the contracts on the major and fast-tracked projects.

Annacis System

A major crossing of the Fraser River in the vicinity of Annacis Island has been in the plans for highway development for many years. In 1974 a consulting engineering firm was commissioned to study the feasibility of a four-lane arterial link connecting the existing arterial systems on either side of the river. The study paid particular attention to the river crossing portion. This project was reported in 1975 and established the concept for the overall crossing system.

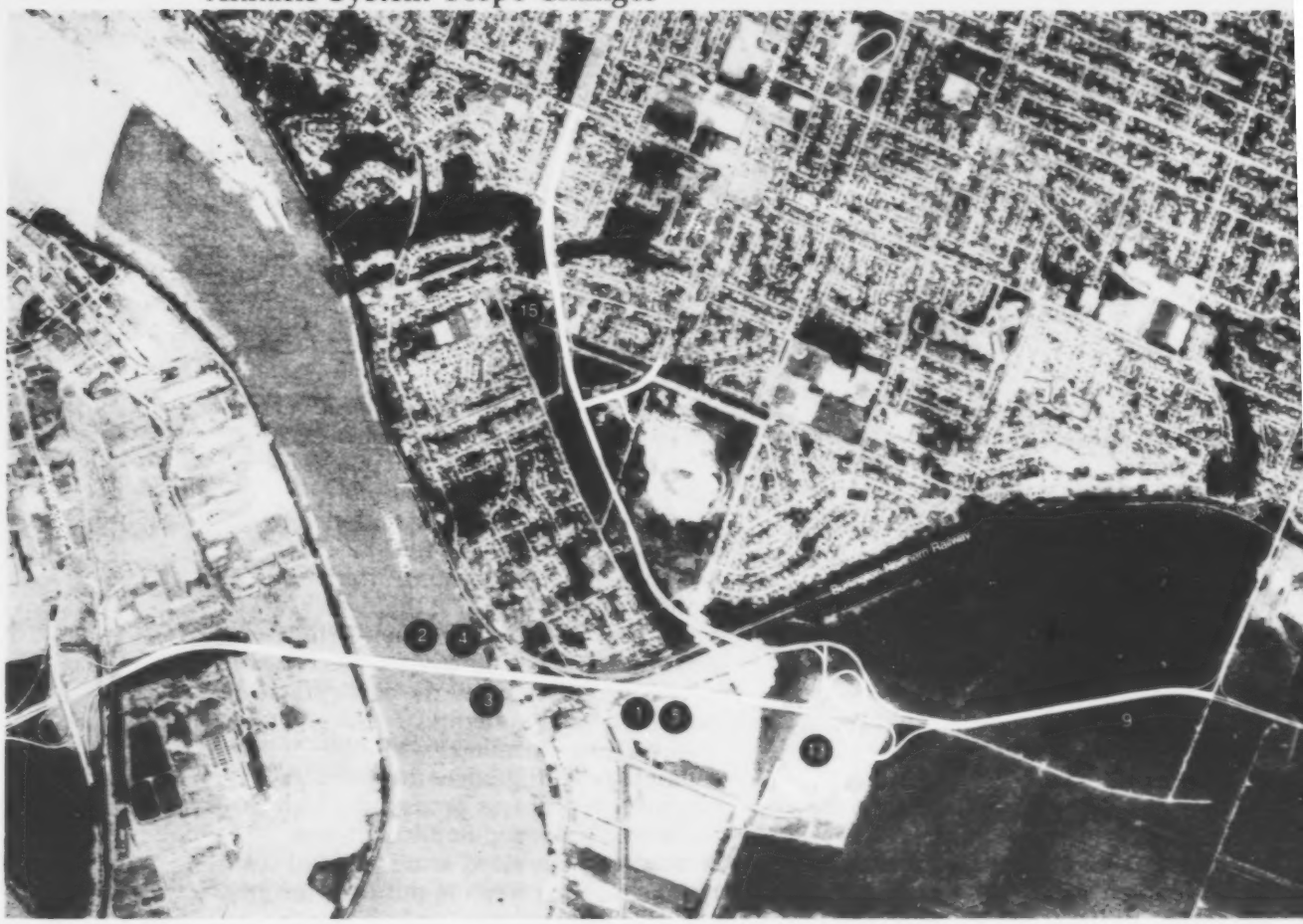
In 1979 the consultant was commissioned to update the work. A summary report was produced which outlined a proposed implementation strategy and provided some updated cost estimates. The project at this time was in a very preliminary stage and neither the scope nor the total extent of the project were well-defined.

On February 22, 1980, the then Premier and the Minister of Transportation and Highways announced an immediate start ". . . on a major new Delta–New Westminster highway and bridge system, including a crossing of the Fraser River at Annacis Island."

The news release which accompanied the announcement went on to state ". . . The four year $130 million project was unveiled at a morning meeting in Delta Friday, February 22, which included mayors and aldermen from various municipalities, representatives from civic groups, and residential and business associations and the media."

The $130 million estimated capital cost was, as near as the Commission can

Fig. 8
Annacis System Scope Changes



Main Crossing (Main Bridge Plus Approaches

1 Provided for six lanes instead of four lanes

2 Main span length increased from 440 m to 465 m

3 Provided protection of piers from ship collision

4 Used higher quality cable system (for increased longevity)

5 Provision for rail transit

Highway South

6 Highway realignment between 64th Avenue and Highway 99

7 relocation of B.N.R. between 64th Avenue and Highway 99 including additional grade separations at 64th Avenue and Highway 10

8 Design speed increase; posted speed 80 km/h instead of 60 km/h for full length of highway

9 Provided road grade for six lanes instead of four lanes between Nordel and 72nd Ave

Delta Connections

10 Full, instead of partial, interchange at Highway 99

11 Interchange at Highway 10 instead of at-grade intersection

12 Interchange at 64th Avenue instead of at-grade intersection

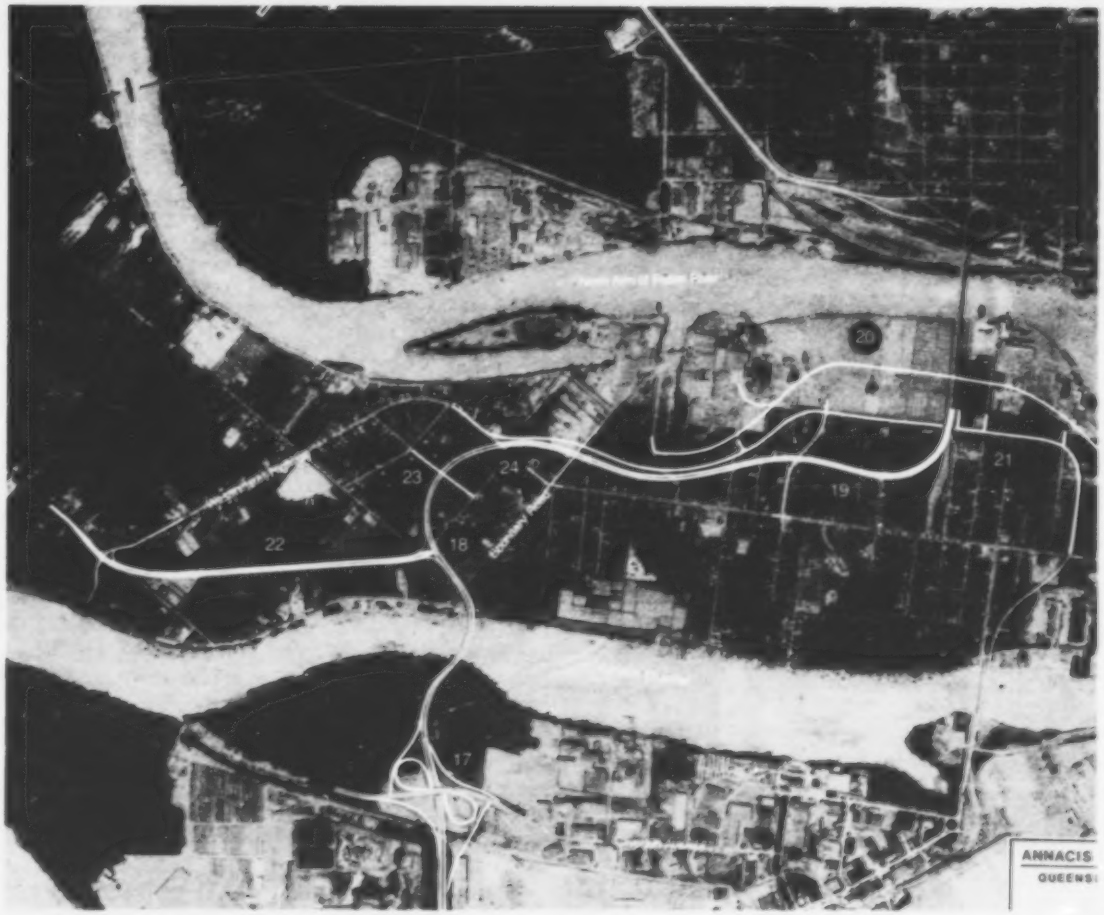
13 Interchange at Nordel instead of at-grade intersection plus provision of major highway maintenance yard and vehicle weigh station

14 Realignment of Highway 10

15 More extensive connections to municipal roads from Nordel Interchange

16 Addition of intersection improvements on Scott Road at Highway 10, 64th Avenue, & 72nd Avenue

Fig. 8
continued



Highway North

17 Upgrading of Cliveden Interchange to be compatible with future six laning

18 At-grade intersection at Westminster Highway instead of interchange

19 New Queensborough Bridge Connector instead of using existing Ewen Avenue

20 Relocation of B.C. Hydro Rail through Queensborough

21 Construction of Queensborough Loop Road

22 Higher standard on Richmond Connector

23 Addition of Thompson Road pedestrian overpass

24 Design speed increase

determine, based on the consultant's preliminary report. This report was not reviewed to any significant extent within the Ministry; however, it was a Ministry document and inasmuch as the estimated cost of $130 million was used, the Ministry is responsible for the estimate.

Construction started in 1980 with just over $8.5 million spent in fiscal 1980–81. The first contract, awarded in November 1980, was for stockpiling sand dredged from the Fraser River.

During 1980, 1981 and 1982 the Ministry and its consultants proceeded to make detailed designs for the Annacis System. Although some discussions had been held with affected municipalities during the preliminary work, there had been no detailed work done nor had there been any involvement with municipal councils and affected citizens and citizens' groups. This detailed design work reviewed the requirements from a technical point of view and also took into account various municipal and citizens' groups desires and demands.

The result of this work was that the Annacis System, as announced, from the Queensborough Bridge to Highway 99, underwent significant enlargement in scope. The changes in scope are indicated, together with their locations, in Figure 8 taken from a letter from the project's engineering coordinator to the Commission dated October 22nd, 1987.

At the same time, this design work and consultation indicated that if the Annacis System was to accomplish significant relief to the other crossings of the Fraser River, then it would also be necessary to complete Marine Way from Vancouver to the Queensborough Bridge and improve the connections to the bridge, as well as to construct the Richmond Freeway from Annacis Island to Highway 99 with connections to the Knight Street Bridge.

These are all reasonable and necessary additions to the Lower Mainland highway network, but the disturbing part to the Commission is the lack of a systematic and regularized method to establish the requirements and the definitions of the project, that is to say, to establish the project scope.

At the time of the 1980 announcement these final requirements were not known or if they were known they were not documented or otherwise available. The annual Estimates for 1980–81 and 1981–82 included funding for the Annacis System with approximately $33 million being spent in those fiscal years. But it was not until the summer of 1982 — eighteen months after the Premier and Minister's announcement — that the Ministry had decided on the requirements and produced an estimate of cost of $483 million. This estimate was made available to the Ministry executives on August 9, 1982, but as far as the Commission can determine, no estimate was officially transmitted to Treasury Board until December 15, 1983 when approval was requested to award the contract for the main bridge.

Even then, this request to Treasury Board was not for $483 million; rather, the Board was advised of $367.2 million. The difference was the result of not including the cost of the Richmond Freeway and the work at the north end of the Queensborough Bridge.

From information available to the Commission it appears that there were discussions with Treasury Board staff in the spring of 1982 suggesting a total "guestimate" of $475 million. However, the official advice at the political level was contained in the Minister's December 15, 1983 letter to the Chairman, Treasury Board requesting authorization to award the main bridge contract.

Throughout the Annacis project, the Ministry reported its annual expenditures in the normal way, that is, in its *Annual Report* allocated between the following Electoral Districts: Burnaby-Edmonds, Burnaby-Wellingdon, Delta, New Westminister, Richmond. Project expenditures were not recorded separately in the *Financial Statements* except in fiscal 1985–86 when the Annacis System was included in the separate Vote 74 for Economic Renewal. Nor were the costs recorded anywhere against the estimated

total expenditures.

However, there were some public statements about costs. A news release on March 1st, 1984 announcing the award of the Mainspan Annacis Bridge stated:

> "By the end of March 1984 $81 million will have been spent on the Annacis Crossing System. Of this total, approximately $35 million has been spent on right-of-way, $25 million on bridge and road construction, and the balance on planning — environmental studies, geotechnical investigations, and design work. Total expenditure at completion of project will be $275 million."

On March 10th, 1986 a news release announcing the placement of the last two precast concrete panels for the Mainspan Bridge stated:

> "Slated for completion in June, the $376 million Annacis system is expected to re-route almost 25 percent of the traffic currently using the George Massey Tunnel and Pattullo Bridge."

Evidence is that news releases are prepared in the Ministry and presumably these estimated costs came from there as well. Why these numbers were used and exactly where they came from is unknown and the Commission did not inquire extensively about this. The information shows again the disregard for the facts in preparing and making public statements.

During construction of the Annacis project the Ministry had good internal records of costs. The information made available to the Commission shows that the project was adequately planned and coordinated from an internal operational point of view. However, there were definite problems of containing scope and cost. The majority of the cost data is for the purpose of tracking annual expenditures and for preparation of annual estimates. The monthly statement summarizing authorizations and expenditures was prepared for the Annacis project in similar format to that previously described for the Coquihalla.

The record for Annacis shows expenditures on grade construction contracts almost always exceed the contract amount. The Ministry seems incapable of controlling the scope of a grade construction contract or of making a realistic estimate of what a grade construction contract will finally cost.

This is illustrated by information in the Ministry Brief, Appendix D which provides a partial listing of the grading and structures contracts with both "original" and "final" costs. From these lists, the contracts for the Annacis bridge and structures are shown with an original cost of $141 million, and had a final cost of approximately $153 million, a difference of $12 million or 8.5%. ($5.5 million of this difference is due to additions made in the contract for the mainspan.) By contrast, the contracts for Annacis grade construction were originally estimated at $81 million, and showed a final cost of $108.5 million, a difference of $27.5 million or 35%.

Further, in response to the Commission's requests, a letter of November 10, 1987 from Mr. B.R. McKeown, Project Co-ordinator, provided the following information to compare final costs with the project estimates as passed to Treasury Board in 1983:

Annacis Project
Comparison of 1983 Estimates and Final Costs
Excluding Richmond Freeway and North End Queensborough Bridge

($ Millions)

	Estimate	Final Cost	% Variance
Geotechnical	$ 12.73	$ 10.82	− 12.6%
Structures	218.43	176.07	− 19.4%
Right of Way	38.07	40.09	+ 5.3%
Grade Construction	98.08	118.45	+20.8%
Total	**$367.31**	**$345.43**	**− 6.3%**

From this it is clear that the substantial savings which were realized in bridge construction were largely used up in the grade construction work.

Reference has been made before to the uncertainties inherent in grade construction contracts and the Commission is well aware of these. At the same time it is evident that a better assessment of the work to be done would lead to a more realistic estimate of quantities. It would lead also to less negotiation and more competition which, combined with more stringent control of changes, would result in less cost. Finally, decisions to make scope increases are more likely to be solidly-based and subject to greater scrutiny when founded on realistic cost estimates.

Northeast Coal Project Highway Development

The Northeast Coal Project highway development is referred to in the Ministry Brief as follows:

> "The highway from Chetwynd to the new townsite of Tumbler Ridge was a part of the infrastructure for the development of two coal mines in northeastern British Columbia.
>
> The government signed an agreement with Teck Corporation and Quintette Mines in 1980 for the development of two major properties to be in operation by 1984. Included in the agreement was access by road and rail, the development of a townsite at Tumbler Ridge and hydro-electric service.
>
> The highway from Chetwynd to Tumbler Ridge was commenced in 1981 and completed in the spring of 1984. It was estimated to cost $73 million (1981 dollars), by letter to Northeast Coal Development on May 7, 1981 and was revised to $85.6 million on June 18, 1981.
>
> This estimate was updated on a monthly basis to Northeast Development and by February 1982 the budget was $91.8 million.
>
> The final cost of the project was $97.2 million, an increase from the June 1981 estimate of 13%."
>
> [Appendix D, Ministry Brief]

The cost estimates of May 1981 and February 1982 were made after construction had started in January 1981. The Commission is advised that in 1980 when the agreement was made between the government and the mining companies, the estimate available from the Ministry was approximately $50 million. This estimate had been made in October 1976 for the purpose of comparing routes and could be described as a reconnaissance estimate.

The Commission's concern is again about cost estimates which do not at all reflect reality and upon which large investment decisions are based. The Commission has not inquired whether the project scope changed or whether the site conditions changed or what else changed. It does not matter. What matters is that the original estimate was not kept up-to-date, had inadequate provision for uncertainty, had no upper or lower boundaries of probable cost, apparently had no provision for inflation or other escalation, but rather was a single-value estimate with 100% probability of being exceeded.

As the Northeast Coal project highway was fast-tracked, the likelihood of cost over-runs was increased.

From the information in the Ministry Brief, the pattern described for the fast-tracked Coquihalla and Annacis system repeats itself again. The grade construction contracts exceeded the tender amounts by about 32% whereas the bridges and structures exceeded the bid amounts only by 1.82%.

As noted before, uncertainties in grade construction contracts are much larger than uncertainties in bridge construction contracts. Accordingly it is to be expected that the contract payments will differ from the tender amounts. However, it is the amount of the change and the fact that it is always an increase and never a decrease that is of concern. No appropriate allowance appears ever to be made for contingencies and uncertainties.

In the Commission's opinion, the amount of the increase in these contracts demonstrates again that the Ministry's documents and the methods of preparing

and administering its unit price contracts could be improved. This matter is dealt with further in Chapter 6, Practices and Procedures.

Normal Ministry Work

In inquiring into normal Ministry work all Ministry capital construction contracts since 1980 in excess of $1 million were examined. This amounts to approximately $1.2 billion worth of highway construction. Part of this work was included in that done by the accounting advisor Mr. D. Hooper, who made a detailed examination of 15 randomly selected contracts. These 15 contracts are ones in which actual expenditures significantly exceeded the contract bid amounts plus authorized extra work orders. These contracts, although part of the Ministry's regular capital expenditure program, were selected to be representative of those with large overruns.

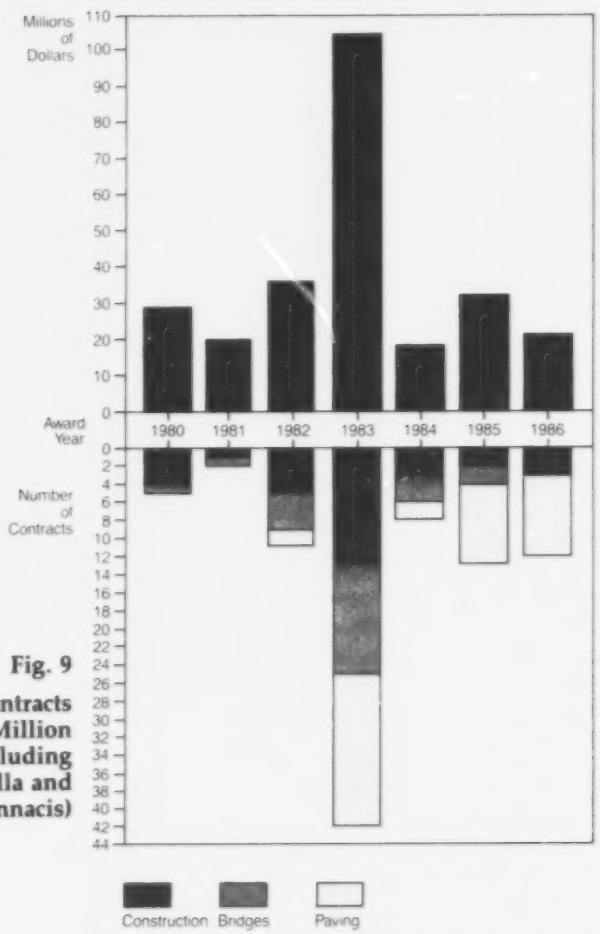


Fig. 9
Ministry Contracts Over $1 Million (Excluding Coquihalla and Annacis)

Mr. Hooper's report is appended hereto as Appendix E. In his report Mr. Hooper describes his work and arrives at a number of conclusions in respect of financial issues as well as listing several "issues to consider". These matters raised by Mr. Hooper are dealt with throughout this report and are the subject of several recommendations.

The 15 contracts examined in this review totalled $181 million. More than one-half this amount, $91 million, was work beyond the original contract amounts and one-third, $60 million, was based on prices negotiated between the Ministry and the contractors. The review of contractors' records corroborated the information contained in the Ministry files regarding the progress of the contracts, and the accountant could find no evidence of irregularities in the amounts paid to the contractors. The schedules to his report give a summary of the reasons for increase for each of the 15 contractors.

In gathering information for his report, Mr. Hooper and those working for him inspected the contractors' records, held interviews with them and, where possible, also interviewed the supervisors who had been on the work sites. Based on these conversations with contractors and their accountants, the following in relation to Ministry work appears to be the general standard prevailing in the industry:

> "On each contract, contractors aim for a gross profit of 20% of revenue to cover overhead and contractors' profit. Information provided on 8 out of 15 contracts suggests that recent experience has been to earn an average gross profit of approximately 10% while overhead costs were in the 6% to 10% range. Contractors believed they were making

only a small profit and some were taking a loss on construction projects.

All of the contractor personnel interviewed indicated the present climate surrounding road and bridge construction is extremely competitive. Some suggested this climate was due to the recent recession and high levels of unemployment in British Columbia. Contractors bid low in order to have their equipment working rather than idle. Other union contractors suggested prices were driven down to competitively bid against non-union contractors.

Due to low expectation of profit or, indeed, losses on highway contracts and the highly competitive climate surrounding road construction, a number of contractors are getting out of the construction business. A few are currently trimming their operations in this area and diversifying."

[Hooper—Appendix E]

These observations are of interest in that they enable conclusions to be drawn from company information not revealed to the public, the Ministry or industry associations. The accountant's work confirms the Ministry and industry views that a very competitive situation exists, and illustrates that in recent years contracting for highway work has not been a profitable undertaking, and that the public received value for its money.

In order to assess the normal contracting work of the Ministry a datafile of all Ministry contracts over $1 million was prepared by the research engineer, Mr. Stinson, in addition to the work done by the accounting advisor. This datafile includes the 15 contracts which were examined in detail by Mr. Hooper. Mr. Stinson's report is included as Appendix D.

The main datafile — Datafile A — comprises 283 contracts: 139 for grade construction; 62 for bridges and structures; and 82 for paving or surfacing. The data was derived from information in the Ministry's Financial Services Branch, but as noted by the research engineer, the information is not precise because of the inconsistent nature of the Ministry's records over the years. However, it is considered to be adequate for the purpose of a general overview of the Ministry's work. Figure 10 shows for the years 1980 to 1986 the numbers and value of contracts in Datafile A. It shows how the $20 million in capital work done in 1982 increased six fold to $120 million in 1983 and had risen ten

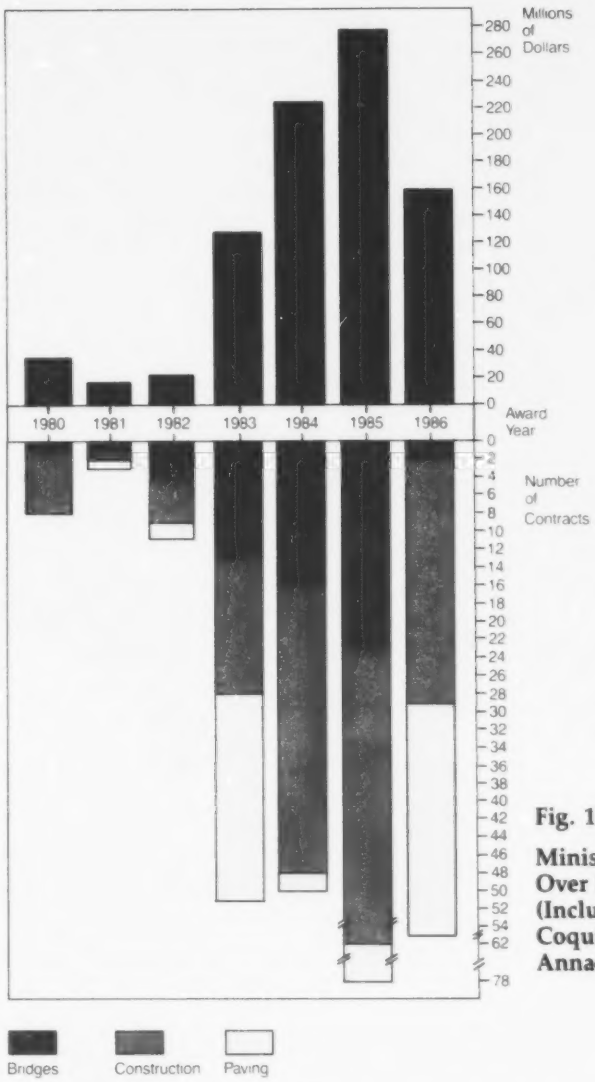


Fig. 10

Ministry Contracts Over $1 Million (Including Coquihalla and Annacis)

Ministry Contracts — "Normal Work"

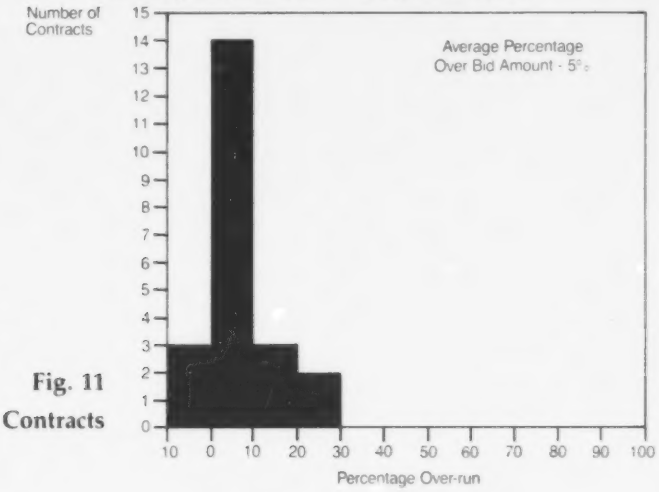


Fig. 11
22 Bridge Contracts

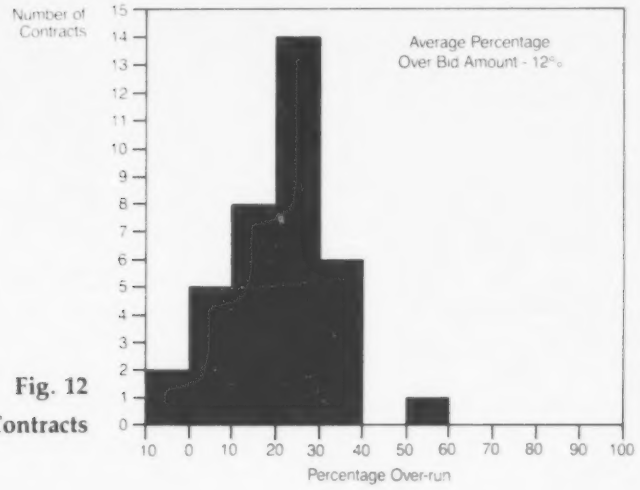


Fig. 12
39 Paving Contracts

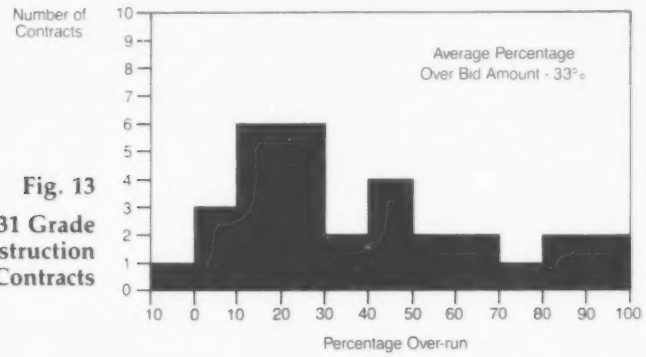


Fig. 13
31 Grade Construction Contracts

fold by the year 1985, when both Annacis and Coquihalla projects were under way. The total diminished to $160 million in 1986.

A second datafile — Datafile B — contains 93 contracts and represents the Ministry's more routine capital projects from 1980 to 1986 and is shown in Figure 9. With the exception of 1983, when Northeast Coal access road, Revelstoke-Mica, and many significant four-lane projects (including sections of the Hart Highway, Okanagan Highway, Crowsnest, and Vancouver Island), approximately $20 — $30 million worth of work has been undertaken each year.

The research engineer, Mr. Stinson, attempted to obtain Unit Price Letter information and Extra Work Order information for this datafile. However, this is a difficult task because for each contract the final progress estimate, as well as other files, must be examined. In particular, determining the total amount paid under each contract's Unit Price Letters would be extremely time-consuming for all 93 contracts. Accordingly, to obtain the most useful information with the resources available, a smaller datafile was created. Because Unit Price Letters are applicable primarily to the grade construction contracts the researcher's efforts were focused here, taking a representative cross-section of 18 grade construction contracts and obtaining and documenting the full Unit Price Letter, Extra Work Order, and other payment information. This formed Datafile D.

All the information obtained for grade construction contracts, bridge contracts and paving contracts is included in the research engineer's report in Appendix D.

The purpose of compiling this information was to respond to the terms of reference direction to examine other recent highway construction projects in regard to their overruns, and also to review the Ministry's practices and procedures in administering and reporting on contracts.

The information contained in the datafiles has allowed the Inquiry to be more specific on where overruns occurred

and to make recommendations on the form of contract documentation and administration best suited to handle them.

For the Ministry's normal work, the 93 contracts representative of more routine work (excluding Coquihalla and Annacis), were examined for the initially tendered amounts compared to the final payments to the contractors. This examination is summarized in Figures 11, 12 and 13.

From Figure 11 it can be seen that the average payment on 22 bridge construction contracts totalling nearly $50 million worth of work was approximately 5% more than the tendered price. One bridge contract has been excluded. This contract was for replacement of the anchors and cables for the Okanagan Lake bridge where, the Commission is advised, significant problems were encountered in the underwater work and with defective anchors. A difference of 5% from the contract amount for this kind of construction work to cover minor changes in specifications and owner requirements is considered to be high but acceptable. It is interesting to note that the Ministry's estimate for the work in question at the time of tendering was approximately 10% more than the final payments to the contractors.

Similarly, with the more routine paving contracts, final payments to the contractors on 39 contracts totalling $70 million worth of work was 11.8% more than the tendered amounts. Again, the Commission believes that while this is higher than need be, it can be considered satisfactory when it is taken into account that pavement specifications require a minimum thickness, that any imperfection in the grade is made up by the pavement in order to form a level running surface, and that there are always extra areas such a ramps, parking lots, etc., that are surfaced while the main contract is in progress. However, as will be noted under Practices and Procedures, a more rigorous system to document, approve and report changes would be worthwhile.

Turning finally to the grade construction contracts, the datafile shows that on 31 contracts tendered at a total of $122.7 million the final payments were $163 million or approximately 33% more than the tendered amount.

To examine these increases in more detail, Figure 14 shows from Datafile D the distribution of the payments between the tendered amount, the amount due to quantity adjustments, the amount due to Unit Price Letters and Extra Work Orders for the 18 contracts where this information was available. As noted, these 18 are considered to be representative of the total number of grade construction contracts reviewed.

The amount of growth in the grade construction contracts, that is, more than 30% of the bid amount, is considered to be excessive. The amount due to increased quantities is on average about 17% which is the same as the amount due to extra work and directly negotiated unit prices. As noted before, changes in quantity in unit price earth moving contracts are to be expected, however the change should be a

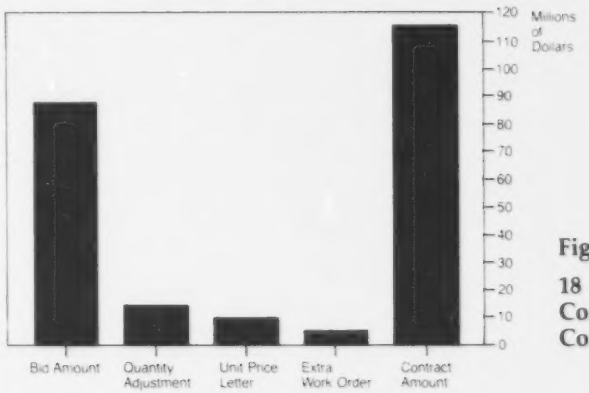


Fig. 14
18 Grade Construction Contracts

"plus-or-minus" adjustment within a narrow range and for a large number of contracts should approach zero. Similarly, in an organization which is doing this work routinely, it should be possible to specify contracts such that the amount of negotiated work is small.

A comparison of Figure 14 — Datafile D, with Figure 6 in Chapter 3 showing the

Coquihalla grading contracts, makes it clear that the fast-tracked Coquihalla experience was more extreme than the Ministry's normal work, particularly in regards to the amount of negotiated work. For the normal contracts, this was 12% of the $87 million total bid; on the Coquihalla this was 50% of $120 million bid.

There are contracting provisions and strategies that can serve to manage both the quantity changes and the amount of work subject to negotiation and reduce both of these to a minimum. This subject is discussed in detail in Chapter 6, Practices and Procedures.

Related Issues

At the Commission's hearings in Vancouver, September 4, 1987, two submissions were made on topics within the terms of reference. They are described below.

Submission by the British Columbia Government Employees Union — Mr. Shields

This submission stated that Ministry employees ". . . if they were to appear before the Inquiry could very well face discipline if they made any comments critical of the Ministry of Highways . . ."

The following day the Deputy Minister, Mr. Roy Illing, wrote to the Commission advising, amongst other things, that ". . . . no Ministry employee has at any time been subject to overt or covert threat of disciplinary action regarding comments on the Coquihalla project . . ."

The Commission forwarded the Deputy Minister's letter to Mr. Shields for the information of his members.

This submission also suggested that the B.C.G.E.U. could provide the names of people who could give information to the Inquiry. In subsequent meetings and telephone conversations between Mr. Shields and the Commission's Counsel and Accountant, no names or other information was forthcoming.

Submission of Provincial Council of Carpenters — Mr. Colin Snell

This submission suggested that workers on the Great Bear Snow Shed had been paid less than the amount charged the Ministry by the contractor and that " . . . the investigation should determine whether there was a discrepancy between wage costs collected from the government by Kerkhoff and the wages actually paid to the workers performing the work . . .".

This matter was investigated by the Commission Counsel and Accountant, who determined that the Ministry had, in fact, reduced labour amounts claimed on the contractors' invoices to substantially what was paid the workers performing the work. Thus, there was no discrepancy between wage costs collected from the government, and the wages actually paid to the workers.

CHAPTER 5

Project Authorization and Reporting

The authorizing of a major project, the granting of funds and the reporting of the work for which those funds have paid are integal parts of project administration and management.

This Chapter reports the Commission's examination of the procedures for administering and reporting of the Coquihalla project. Necessary background to this is an understanding of the overall financial administration process of the Province.

The Financial Administration Process

British Columbia's *Financial Administration Act* sets the legal framework under which the Legislature gives the government of the day the authority to spend the taxpayers' money. In common with other Westminster-style legislatures, the centrepiece of the process is the presentation of the Budget by the Minister of Finance, seeking legislative approval for the government's spending plans for the coming fiscal year.

The Introduction to the *British Columbia Public Accounts 1984-85, Vol. 1* provides an overview of the financial process:

> On Budget Day the Minister of Finance presents the revenue and spending plans for the next twelve month period in a budget speech. This budget speech is published with various supplementary tables and supporting statistical material and is tabled in the Legislature along with a volume listing all the estimates of revenues and spending programs. This volume is called the "Estimates" (sometimes referred to as the "Blue Book"). Spending for programs and services under each Ministry is aggregated in the "Estimates" into packages or "votes", so called because the Legislature debates and then votes approval for the composition of each package.
>
> The official spending authority for these Government programs is provided through a statute called the "Supply Act" . . . A final Supply Act is passed when all votes have been approved by the Legislature.

Each of the "votes" presented in the Estimates contains a description indicating the purpose for which the money is to be spent. Sub-vote descriptions are also included, giving more detailed information on the proposed expenditures. The *Supply Act* is approved by the Legislature, based on the detailed information provided in the Estimates.

The *Financial Administration Act* was reviewed by the Commission's legal and accounting advisors and a number of sections were determined to be relevant to the terms of the Inquiry. Part 4 of the *Act* deals with expenditure and is straightforward:

> 18. (1) No money shall be paid out of the consolidated revenue fund without the authority of an appropriation.
>
> 20. (2) No sum appropriated by a Supply Act shall be paid and applied to any purposes other than those described in the votes, or in excess of the amounts contained in the votes."

The *Act* makes provision for a further means of authorizing expenditures, in addition to the annual Estimates:

> 21. (1) If, while the Legislature is not in session, a matter arises for which an expenditure not foreseen or provided for or insufficiently provided for is urgently and immediately required for the public good, the Lieutenant Governor in Council . . . . may order a special warrant to be prepared for the signature of the Lieutenant Governor authorizing the payment of an amount the Lieutenant Governor in Council considers necessary out of the consolidated revenue fund.

Section 25 puts controls on contracting for work:

> 25. (1) No agreement or undertaking of any kind providing for the payment of money by the government shall be entered into that would result in an expenditure in the then current fiscal year in excess of an appropriation for that fiscal year.
>
> (2) It is a term of every agreement providing for the payment of money by the government that payment of money that becomes due under the agreement is subject to an appropriation being available for that agreement in the fiscal year when the payment falls due.
>
> (3) The Treasury Board may by directive set conditions to be observed before agreements or undertakings providing for the payment of money by the government are entered into.

The *Financial Administration Act* also authorizes the procedures by which government and the public service oversee and report the expenditures authorized by the Legislature. The *Act* establishes a cabinet committee called Treasury Board, chaired by the Minister of Finance; the Deputy Minister of Finance serves as its Secretary. Treasury Board has a staff to advise and assist it under the day-to-day management of the Deputy Secretary of Treasury Board. Once a sum of money has been appropriated by the Legislature in a vote for its described purpose, the responsible Minister must obtain Treasury Board's approval for detailed expenditures according to the policies and procedures set in place by the Board.

To find how the Coquihalla spending had been authorized, the Commission's first Information Request to the Ministry asked for information about "formal approvals for the overall project, including submissions, reports and estimates". The Ministry responded on August 17, 1987, by sending to the Inquiry listings of Special Warrants, Treasury Board submissions, authorizations, and lists of contracts approved by Treasury Board for the fiscal years ending March 31, 1985 and March 31, 1986.

At the same time that research was being done on spending authorizations, other work was underway to find the total cost of the Coquihalla. In this work one particular contract for grade construction presented a paradox. This was the contract to re-build Highway 3 from Hope to Nicolum Creek at the southern end of the Coquihalla Valley. This contract was listed in the Ministry's *Annual Report* for the Yale-Lillooet Electoral District under "Coquihalla Highway" in 1984-85, but in the next year could not to be found in the Yale-Lillooet listings under "Economic Renewal — Coquihalla Highway Construction". After a search, it was found in the expenditure details for Yale-Lillooet under the heading "Highway Capital Construction". Yet for both years the contract was listed under the Coquihalla project in the report of the Ministry's Director of Construction.

It was surprising that this contract had been moved from the Ministry's li ting of Coquihalla expenditures, as it would be difficult to find any contract more essentially related to the Coquihalla Highway. Thus there were two puzzling elements: Why had this particular contract been moved from the Coquihalla listing to the general listing? And had the description of the Coquihalla been changed over the two fiscal years?

Further, in Mr. Hooper's investigation of the Ministry's accounting systems, he was made aware of a transfer of expenses which had occurred during fiscal 1985-86 between the Coquihalla legislative appropriation (Vote 74) and the Highways Operations appropriation (Vote 69). In studying the Ministry's Brief, his investigative experience caused him to examine closely the statement regarding the Special Warrant provided to the Ministry in fiscal 1985-86. This was specifically foot-noted as "not Coquihalla". In his evidence, Mr. Hooper described this:

> MR. HOOPER: A. . . . looking at [the Ministry's description of Special Warrant #5 for 1985-86 which noted 'not for Coquihalla'] I wondered why the note was in there at all if there was nothing to do with the Coquihalla. I'd wondered in the first place why the note was in there, and that made me look at it a little closer.
>
> MR. MACINTOSH: Q. Yes, and how did you learn of this transfer, was it from the Ministry material?
>
> MR. HOOPER: A. No it was not. It was from the Ministry of Finance. I obtained from the Ministry of Finance a complete print-out of every entry that went through Vote 74 during the 1985-86 fiscal year and there are a large number of journal entries marked Vote Transfer."
>
> [Transcript, p. 594]

These anomalies and unanswered questions caused the Commission to ask for the month-by-month spending on the Coquihalla project from the Ministry, and for further information from the Ministry and the Ministry of Finance on contract authorizations and Special Warrants.

All this information allowed the following chronology of events to be prepared. Appendix E of Mr. Hooper's report to the Commission, contains more detailed information on these financial matters and gives specific references to the financial documents reproduced in Appendix H.

Chronology of Estimates and Cost Authorizations

Fiscal Year 1984-1985 ending March 31, 1985

Legislature in Session 13 February 1984

February 20, 1984 — Budget and Estimates tabled; no suggestion of accelerating Coquihalla or mention of project.

March 28, 1984 — Legislature approves Ministry's Estimates.

April 1, 1984 — request from Minister Fraser to Chairman Treasury Board Curtis for approval to call and award contracts for various capital works for fiscal 1984-1985. Only mention of Coquihalla is one continuing contract for construction of Dry Gulch to Mine Creek; no mention of Coquihalla acceleration.

April 1984 — Cabinet retreat at Cowichan took decision to build Coquihalla Hope to Merritt for EXPO '86. No public announcement made at this time.

Legislature adjourned May 16, 1984

May through September, 1984 — 21 grade construction contracts for Coquihalla awarded Annual Report lists first contract awarded in May 1984.

September 13, 1984 Legislature sits for 1 day

September 26, 1984 — public announcement of the accelerated Coquihalla Highway project at Cabinet meeting in Merritt.

October 19, 1984 — request from Minister Fraser to Chairman Treasury Board Curtis "in accordance with Treasury Board directions" for $100 million Special Warrant. Requested $40 million for Coquihalla on November 15, 1984, and $53 million later that fiscal year. "Funding not available within the budget", which meant that no appropriation had been made by the Legislature and payment for the 21 Coquihalla contracts would be covered by Special Warrants.

November 1984 — 5 more contracts awarded.

November 28, 1984 — $100 million Special Warrant issued.

December 20, 1984 — letter from Minister Fraser to Chairman Treasury Board Curtis requesting further Special Warrant, bringing total for Coquihalla to $120 million as "scope of Coquihalla and related work has expanded".

January 31, 1985 — Special Warrant approved, amount $121.588 million.

Fiscal Year 1985-1986

Legislature in session 11 February 1985

March 14, 1985 — Budget and Estimates tabled. Economic Renewal Vote 74 defined — included $281 million sub-vote for Coquihalla and related projects.

April 1, 1985 — request from Minister Fraser to Chairman Treasury Board Curtis for approval to call and award contracts including Coquihalla worth $288 million — an amount in excess of appropriation. Request notes "amount indicated is considered minimum and additional funding will be required later by Special Warrant if approved".

Coquihalla projects listed in this Vote 74 submission include Coquihalla Hope-Merritt, Ancillary, and Trans-Canada Highway improvements with no differentiation.

May 16, 1985 — letter from Chairman Treasury Board Curtis to Minister Fraser approves April l request and notes "approval limited to Vote appropriation", i.e., no spending is authorized in anticipation of Special Warrant.

June 6, 1985 — Legislature approves Ministry's Estimates, Vote 69 and Vote 74.

Minister's statements of cost estimates in June debate (see p. 10).

Legislature adjourned 28 June 1985

July 15, 1985 — letter from Minister Fraser to Chairman Treasury Board Curtis (Treasury Board Request 8/86) for supplementary $42 million to call and award contracts for Coquihalla under Vote 74. Letter noted that these projects were highest priority following staff meeting of Ministry, Premier's Office and Finance. Total Warrant requested was $156 million. Submission included Trans-Canada Highway improvements under Vote 74.

August 2, 1985 — letter from Minister Fraser to Chairman Treasury Board Curtis (Treasury Board Request 9/86) requesting supplementary authorization of $128.8 million. This cancelled Treasury Board Request 8/86 following "review with Premier and Treasury Board". Attachment showed reduction occurred in Highway 97, Northeast Coal, etc., general construction program. Vote 74 request for Coquihalla and related projects remained at $42 million — $7 million for Hope-Merritt, $20 million for Merritt-Kamloops, $10 million for Merritt-Peachland, $5 million Chilliwack freeway. Treasury Board staff noted that this brought Ministry's 1985-86 Coquihalla total to $321.1 million and that a Special Warrant would be needed.

September 23, 1985 — letter from Chairman Treasury Board Curtis to Minister Fraser approved Request 9/86 and asked that request for Special Warrant be brought forward later.

Legislature in session from 20 November 1985

November 20, 21, 1985 — *Coquihalla Highway Construction Acceleration Act* debated in Legislature. Opposition member asked Minister Fraser if ". . . Treasury Board has given conditional approval for an expenditure somewhat over $100 million beyond the original estimate for this project?" Mr. Fraser's response was "To the section of road from Hope to Merritt and Merritt to Kamloops? No, I don't think that's correct. It might be for other highway expenditure, but not on this section." [Hansard p. 7076]

Legislature adjourned December 2, 1985

December 9, 1985 — letter from Minister Fraser to Chairman Treasury Board Curtis (Treasury Board Request 21/86) sought Warrants for $118.8 million further to Request 9/86. Coquihalla requirement under Vote 74 increased by $19 million due to "need to carry out extensive off-site works on Highways 1, 5 and 8." Total for Coquihalla is $61.8 million. This is first reference to "offsite" projects. Ministry reduced spending in all categories except Coquihalla to bring Warrant to $118.8 million. Staff note advised that total spending was $82 million higher than Blue Book figure.

Warrant Request (21/86) circulated by Treasury Board staff to members (including Premier). All indicated approval, except members, Premier and Hon. R.H. McClelland who offered no comment. Request approved by Chairman Treasury Board Curtis January 8, 1986. Apparently no action was taken to prepare Warrant and Order-in-council by Treasury Board staff.

January 20, 1986 — letter from Minister Fraser to Chairman Treasury Board Curtis (Request 21/86A) [emphasis added] for $118.8 million Special Warrant. All expenditures now put to Vote 69. No reference made to previous request, Coquihalla, or Vote 74.

January 21, 1986 — Memo from Secretary Treasury Board to Chairman Treasury Board noted the Ministry will be using Vote 74 only for those items specifically related to the main Coquihalla — all remaining "off-site" charged to Vote 69. Initialled "o.k." by Chairman Treasury Board Curtis and noted "Rush return to David Emerson" with instruction to circulate after the fact to other Treasury Board members. Honourable G. Gardom noted "a paucity of information, please refer to Cabinet".

January 23, 1986 — Request approved by Chairman, Treasury Board.

January 28, 1986 — Special Warrant and Order-in-council prepared.

January 29, 1986 — Memo from Ministry's Director of Financial Services Price to Ministry officials with copies to

Ministry Executive (Johnson, Elston, White, Zapf). This circulated a list of Coquihalla "off-site" projects with instructions that their costs be transferred to Vote 69.

January 31, 1986 — Order-in-council and Warrant signed and issued.

Legislature in session 11 March 1986 to 17 June 1986

March 20, 1986 — "Summary of 1985-86 Special Warrant Project Authorizations Highway Capital Construction" tabled in Legislature. This listed 122 projects authorized or funded by the $118 million Special Warrant, but staff testified list did not truly reflect the contracts authorized or paid for by warrant and was "out of context with reality".

Public Accounts show Vote 74 Coquihalla Highway and related projects as "Construction: Appropriation — $281 million; Actual Expenditures — $278 million."

Project Authorization

In April 1984, the beginning of fiscal 1984-85, Cabinet decided to build the Coquihalla. More than twenty contracts were called and awarded during the following summer. The legislature was in session until mid-May and again for one day in September, and could have dealt with the required funding. Nevertheless, the entire project cost was funded by two Special Warrants approved in November and January totalling $120 million.

By fiscal 1985-86, the project had been publicly announced. In the Budget and Estimates there was an appropriation for Coquihalla and related projects, Vote 74, under the government's Economic Renewal program. The creation of this sub-vote was a positive step, from the point of view of project management, as it showed a clear amount of money, a definition of its purpose and, had been accompanied to Treasury Board, by a specific listing of the work to be done together with cost estimates.

However, during the months July to September 1985, a Supplementary Program was authorized for Vote 74 — Coquihalla and related projects. Like authorization for the main Coquihalla the year before, this was done without advising the public or seeking funds from the Legislature. Rather, Treasury Board approved entering into contracts in excess of amounts appropriated and Special Warrants were promised for later in the year when the cash was needed. The usefulness of Vote 74 as a project management tool had been lost.

When the Commission reviewed the provisions of the *Financial Administration Act* with the events summarized in the chronology two issues arose. Firstly, funding the project by Special Warrants when the legislature could have voted appropriations. This appeared contrary to the intent of section 21 (1); and secondly awarding contracts with no appropriation in place either by legislative vote or by Special Warrant, this appears contrary to section 25 (1).

Mr. Hooper's report gives more specific details of the latter. These issues raised the question of whether the *Financial Administration Act* had been followed. Of equal importance to the Commission was whether these financial procedures were conducive to the effective management of the Coquihalla project.

Reporting

For fiscal 1984-85, there was no project reporting in the *Public Accounts*, or under a single heading anywhere else, for the Coquihalla Highway. A total can only be found by consolidating individual contract spending from the Electoral District listings in the Ministry's *Annual Report*.

For fiscal 1985-86, the Coquihalla and related projects were reported under Vote 74. However, as the chronology showed, $80 million of work was moved out of Vote 74 to Vote 69, and the Special Warrant made necessary by the Supplementary program was applied to Vote 69. Apparently, the project had been re-defined and its scope of related projects had been reduced. Again, the costs of the Coquihalla Highway could not be accurately determined except by examination of the individual contracts

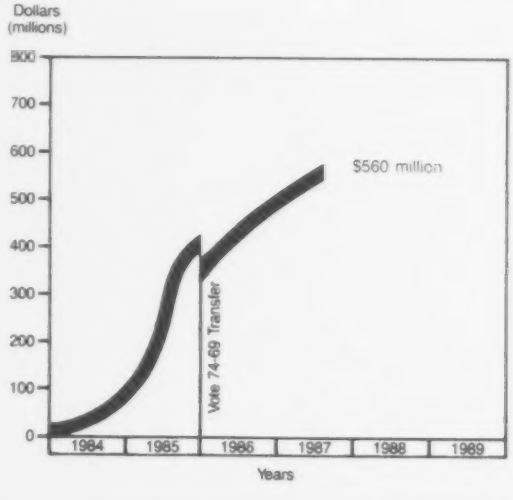


Fig. 15

Coquihalla Highway Hope-Kamloops Expenditures — Effects of the Transfer of Expenditures from Vote 74 to Vote 69

later published in the Ministry's *Annual Report*. Figure 15 shows the effect of this transfer of expenditures on the project's overall costs.

Of concern here was that the redefinition or scope reduction, by means of the vote-transfer, had given the project additional funds to cover the mounting costs — without any appropriation and without any statement in the accounts that this had been done. Thus it was misleading. Also, the vote-transfer appeared to be contrary to the intent of the *Financial Administration Act* section 20 (2), that "no sum appropriated by a *Supply Act* shall be paid and applied to any purposes other than those described in the votes. . . ."

This issue was important to the Commission's findings on the Ministry's reporting of the Coquihalla project. Thus, it was necessary to find out how this vote-transfer of expenses had been authorized, and what its purpose might have been.

Further Inquiry

The Commission inquired into these matters of authorization and reporting at its November 5, 1987 hearing, specifically the transfer of expenditures and the provisions of the *Financial Administration Act*.

Before the hearing and following its established procedures, the Commission asked Treasury Board staff to supply further documentation. After legal counsel had ensured that no breach of cabinet privilege would occur, further material was provided — chiefly Treasury Board staff Briefing Notes and circulation slips. This was followed by further interviews with Mr. Tom Johnson, Mr. Stu Price and Mr. Al Rhodes. Contact was also made with members and former members of Treasury Board staff: Ms. Sue Stephen, Messrs. Tony Stark, Rick Krowchuck, Frank Klassen, Doug Hyndman and Dr. David Emerson. Counsel for the Attorney General was present at some of these preliminary interviews.

As the Treasury Board funding requests and approvals had been made by the Ministers responsible, contact was made with Mr. Hugh Curtis, former Chairman of Treasury Board and Minister of Finance, and Mr. Alex Fraser, former Minister of Highways. Also contacted were Mr. Bud Smith, former Principal Secretary in the Office of the Premier, and former Premier W. R. Bennett, as the documents referred to the part played by the Premier's Office in determining the supplementary highway priorities for the 1985-86 program.

At the Commission's earlier hearings on October 19-20, Ministry and Treasury Board staff had acknowledged that the vote transfer of Coquihalla expenses had taken place and that the total Warrant authorization had been applied to the highway General Operation Vote 69. The Ministry staff's evidence showed that they believed this vote transfer was appropriate and had been initiated by Treasury Board.

> MR. MACINTOSH: Q. . . . at the time that the Ministry's Treasury Board Request 21/86A was submitted, January 20, it was viewed that it was appropriate that it all be in [Vote] 69?
>
> MR. RHODES: A. That is correct.
>
> MR. MACINTOSH: Q. And the change in view was attributable to what, again?
>
> MR. RHODES: A. The change in view was made by Treasury Board policy.
>
> MR. MACINTOSH: Q. Right.
>
> MR. RHODES: A. That it was general highways capital construction work and it was properly, should be properly charged and recorded again Vote 69.
>
> MR. MACINTOSH: Q. Right and as I think you've said, Mr. Rhodes, that was suggested by Treasury and acceptable by the Ministry?
>
> MR. RHODES: A. It was.
>
> [Transcript pp. 275-276]

At the November 5 hearing the Commission questioned the Ministry's Director of Financial Services. Mr. Price's and Mr. Rhodes' successor Mr. Tom Johnson.

Mr. Price testified first:

MR. PRICE: A. Well I was advised that the previous letter of December 9th was not going to be approved and that we were to make up a new letter in the fashion that you see here.

MR. MACINTOSH: Q. Yes, and when you say you were told that the earlier one wasn't going to be approved, obviously you didn't know that it had been approved at Treasury Board.

MR. PRICE: A. That's correct.

MR. MACINTOSH: Q. Yes, and who was it who told you that the December letter wasn't going to be approved?

MR. PRICE: A. The Deputy Minister.

MR. MACINTOSH: Q. And by then that was Mr. Johnson?

MR. PRICE: A. Mr. Johnson.

MR. MACINTOSH: Q. And so he told you the December letter was out, if I can put it that way, and what else did he say?

MR. PRICE: A. And to make up a new one with the funding in Vote 69.

MR. MACINTOSH: Q. Yes, basically saying, direct all the Special Warrant fund towards 69 instead of into the two Votes?

MR. PRICE: A. That's right.

MR. MACINTOSH: Q. And did he say why?

MR. PRICE: A. No.

MR. MACINTOSH: Q. Did he say that that was at his initiative, he thought that was a good idea?

MR. PRICE: A. No, no.

MR. MACINTOSH: Q. Did he say that it was at the initiative of anybody else?

MR. PRICE: A. He didn't say.

[Transcript, pp. 683-4]

As Mr. Rhodes had retired on December 20, 1985, Mr. Tom Johnson was the Deputy Minister at the time the vote transfer took place. Mr. Johnson testified:

MR. MACINTOSH: Q. This letter of January 20th (requesting the Special Warrant for Vote 69 only), it was prepared under your direction?

MR. JOHNSON: A. Yes.

MR. MACINTOSH: Q. Prepared by Mr. Price?

MR. JOHNSON: A. Yes.

MR. MACINTOSH: Q. Why was it prepared?

MR. JOHNSON: A. By my recollection we were asked to prepare it and I do not recall having someone ask me from Treasury Board to prepare it, it was my understanding, or I knew it was being done and I may have been asked and then passed that to Mr. Price or it may have come through the Treasury Board staff to our staff and we were made aware that way but I do not recall which was the case.

[Transcript, p. 696]

Mr. Johnson acknowledged the effect of the alteration:

MR. MACINTOSH: Q. That's right, and the money relating to them giving rise to the appropriations, it stayed in Vote 74?

MR. JOHNSON: A. Yes.

MR. MACINTOSH: Q. All right. Now, the effect of that would be that if the streamlined Coquihalla, that is the part that was left in 74, if that part encountered excessive costs or overruns those overruns could be absorbed in part by the $66 million that stayed in Vote 74, correct?

MR. JOHNSON: A. Yes, you could put it that way.

MR. MACINTOSH: Q. And that's exactly what happened, isn't it?

MR. JOHNSON: A. It was not necessary, once they were taken out it was not necessary to have the warrant in Vote 74.

MR. MACINTOSH: Q. Right, so my assertion is correct?

MR. JOHNSON: A. Yes.

MR. MACINTOSH: Q. In other words the overruns could be absorbed by these funds that remained in Vote 74?

MR. JOHNSON: A. Yes.

[Transcript, pp. 704-5]

At this late date in his final testimony, Mr. Johnson also offered the Commission a definition of "related projects" which would again re-define the project and serve to reduce its scope:

MR. MACINTOSH: Q. Well, Mr. Johnson, you spoke earlier, sir, about a distinction between related projects on the one hand and offsites on the other.

MR. JOHNSON: A. Yes.

MR. MACINTOSH: Q. And related included such things as stream diversion and slope adjustment, right?

MR. JOHNSON: A. Yes; related traditionally in the context would mean work on the same corridor but off of the highway.

[Transcript pp. 710-711]

Thus, to summarize, Ministry staff had no recollection of who had directed the transfer of expenses between Vote 74 and 69. The documentary evidence, by comparing Appendix H-8 and H-9 shows that the Ministry, as originators of the December 9 Request, were satisfied that its allocation between two votes was acceptable.

The Commission next heard from Treasury Board Staff. To broadly summarize this evidence: None of them initiated the vote transfer in January 1985 and of equal importance none of them appeared to have had any motive for doing so. Further the Treasury Board staff witnesses testified that they had little interest because the vote transfer did not involve additional expenditures, the total of $118.8 million already having been approved by Treasury Board.

Mr. Curtis testified next. Mr. Curtis was asked the reasons for the vote transfer and change in Special Warrant authorization on January 23, 1986. His response was that he could not answer that question without violating his oath of Cabinet secrecy and betraying his former Cabinet colleagues.

Thus, he testified and confirmed the answers he had given under oath on November 3.

MR. MACINTOSH: Q. I want to know, that's all, I want to know why you approved this apparently without the normal input from Treasury Board members.

CURTIS: A. I will have to be repetitious again. It may well be that the discussions through some weeks previous indicated — at the cabinet table or with members of cabinet — indicated that a certain course of action was decided upon and, therefore, the need for Treasury Board, the routine Treasury Board processing was not relevant.

MACINTOSH: Q. Well, it may have been, was it, was that the reason?

CURTIS: A. Certainly — well, I have to think that it probably was."

[Transcript, pp. 817-818]

And further,

"MR. MACINTOSH: Q. All right. Now, a couple of times today you have alluded to cabinet discussion as perhaps being the cause for the change, that is, for the signature that you placed on the January 23rd document. Is that a fair summary of part of your evidence?

CURTIS: A. Yes. I would qualify it: Cabinet discussion or cabinet familiarity with a particular issue.

MACINTOSH: Q. All right, what did you mean?

CURTIS: A. Precisely what I said.

MACINTOSH: Q. Well, can you elaborate?

CURTIS: A. Well, I think I gave you an example earlier, did I not? That Treasury

Board may well be seized with an expenditure request. In the meanwhile, it is the subject of a presentation to cabinet, or it is raised at cabinet by any one of a number of Ministers. And the resulting discussion which occurs then relieves, if you will, relieves Treasury Board of the responsibility of further review or action.

We were reminded repeatedly by others in cabinet that we were a committee of cabinet, and I used the phrase earlier. And cabinet certainly on a number of occasions protested to and won over Treasury Board members. Very much an adversarial relationship.

MACINTOSH: Q. All right. Now that evidence, sir, is that applicable to your assigning this on January 23rd?

CURTIS: A. It could well be. I cannot say with a certainty that it is, it could well be."

[Transcript, pp. 819-820]

Mr. Fraser testified on November 5, 1987 following Mr. Curtis. Mr. Fraser had been the Minister in charge of highways since before the Coquihalla was announced in 1977 and throughout its construction until late 1986. Mr. Fraser's voice box had been removed as a result of a cancer operation in 1986. His evidence was interpreted and given by his counsel, Mr. Al Basile. Mr. Fraser essentially testified to the following items.

First, although acknowledging his signatures on the letter of December 9, 1985, requesting a Special Warrant divided between Vote 69 and Vote 74, and the letter of January 20, 1986, requesting the Special Warrant for Vote 74 only, he testified that he was unaware of their contents and first learned that all of the money was to go to Vote 69 during the course of the Inquiry. In this regard, he testified that the way the money was allocated by Treasury Board was of no concern to him as long as the money was approved. The main thing was to get the money to build roads.

Secondly, in regards to the list of projects tabled in the Legislature on March 26, 1986, he testified:

"MR. BASILE: A. He said, my recollection of the document is that during the sitting of the Legislature a member of the opposition asked for a breakdown of the Coquihalla expenditures and this was the document that was provided at a result of that request. I'm sorry, breakdown of the warrant concerning the $118,800,000.

MR. MACINTOSH: Q. All right. Is it fair to say that pursuant to that request from a member of the opposition you turned to your staff to have a document to respond?

MR. BASILE: A. He says he doesn't recall specifically doing it himself, but he said when the Legislature is sitting that the, all of the speeches and that goes through to his office which is being monitored and he said the staff would immediately contact the Deputy so that any information he's required to give in the House, it will be obtained.

MR. MACINTOSH: Q. All right, thank you. Is it fair to say then that you turned to your staff to have them come up with the document to allow you to deal with the matter again, back in the House?

MR. BASILE: A. Yes.

MR. MACINTOSH: Q. All right. And beyond that, did you have any involvement at all in the composition or other content of that document?

MR. BASILE: A. None whatsoever.

[Transcript, pp. 832-833]

Finally, Mr. Fraser testified about costs of the Coquihalla Highway:

"MR. MACINTOSH: Q. Right. And with that perspective, I wonder if you can't agree with me that the costs of the Coquihalla have been a politically sensitive issue through much of 1985 and through much of 1986.

MR. BASILE: A. The answer is no.

[Transcript, p. 839]

Mr. Bud Smith testified on November 5

after Mr. Curtis and Mr. Fraser. From April 1984 to April 1986, Mr. Smith served as Principal Secretary to then-Premier Bennett. Mr. Smith is now an MLA for Kamloops, a position which he has held since October 1986.

Mr. Smith gave evidence about his role as Principal Secretary with respect to the Coquihalla project. The questioning of Mr. Smith by Commission counsel was directed toward his knowledge of the Coquihalla project, his involvement with the establishment of priorities for highways, and toward any part he played in the decision of January of 1986 to transfer expenditures from Vote 74 to Vote 69.

Mr. Smith displayed an extremely detailed knowledge of the Coquihalla project from 1973 and, in particular, from April 1984 to the middle of 1985. He testified that from a Social Credit Caucus meeting at Whistler in 1985 a list of the priorities of MLAs for highways and other public works was prepared, and that this list was kept in his office. Mr. Smith testified:

> "MR. SMITH: A. And on an annualized basis the caucus at that time made a list of their priorities.
>
> MR. MACINTOSH: Q. Yes.
>
> MR. SMITH: A. That is to say the M.L.A.'s, for their constituencies, their priorities for capital spending, and it was their responsibility to present their list in respect of — we looked at four things, we looked at health, education, highways and major lottery grants. The members were responsible to give their sense of the priority in their area within each ministry, which school or which hospital was the most important priority, and as between those competing ministries or interests so that you did not have a situation where you were inadvertently getting an over amount of capital in one area and too little somewhere else. So that process did take place at Whistler.
>
> The result of that process was a list of priorities that the M.L.A.'s had made which was kept in my office and when ministries wanted to advance a project they checked the project against that list, and if it was one of the priorities of the M.L.A. then it could go forward and if it wasn't then they had to deal with that M.L.A.
>
> MR. MACINTOSH: Q. You participated in the dealings in Whistler in '85?
>
> MR. SMITH: A. Yes.
>
> [Transcript, pp. 851-852]

However, Mr. Smith claimed minor involvement in establishing the priorities for highway spending which resulted in the 1985-86 Supplementary Program, as he testified:

> MR. MACINTOSH: Q. You see that, and it says underneath that justification, "The projects planned are considered to be of the highest priority as outlined at a recent meeting between staffs of the Ministry of Finance, this ministry and the Office of the Premier".
>
> MR. SMITH: A. Right.
>
> MR. MACINTOSH: Q. Did that include you?
>
> MR. SMITH: A. It probably did, yes.
>
> MR. MACINTOSH: Q. Yes, and at that time is it fair to say that you were a supporter or proponent, a pusher, if you like, of the Coquihalla?
>
> MR. SMITH: A. No, what you should reflect on is what I just told you, is that, and this is, I'm glad you pointed this out because this is a very good example of the process I've just described to you, that we did at Whistler, where each ministry came forward with its proposals and each member came forward with their proposals as to what were priority capital expenditures in their area. Once that was vented and a decision was taken about that a list was kept of those things by me and each ministry when it brought forward its proposals would have to check that against that list, and

that exactly what has happened here, in my view.

MR. MACINTOSH: Q. Yes. All right, well let me —

MR. SMITH: A. And that's why the reference to the Office of the Premier [in the request for the 1985-86 Supplementary Highway Program].

MR. MACINTOSH: Q. All right.

MR. SMITH: A. Because they would have checked that list out and seen that these various proposals out of the economic development side were part of that listing.

MR. MACINTOSH: Q. Well, Mr. Smith it says "The projects planned are considered to be of the highest priority". We'll stop there for a moment. Do you accept that characterization of those projects at that time?

MR. SMITH: A. Of highways projects, probably, yes.

MR. MACINTOSH: Q. All right, and it says "As outlined in a recent meeting between staffs of the Ministry of Finance . . ." —

MR. SMITH: A. Right.

MR. MACINTOSH: Q. — "this ministry . . .", which is Highways, "and the Office of the Premier", so from that meeting this designation of highest priority appears to have come.

MR. SMITH: A. Yes.

MR. MACINTOSH: Q. All right, now it hasn't been our experience in this proceeding so far that the Ministry of Finance is saying "Hey, let's get that road built".

MR. SMITH: A. That's right. But let me —

MR. MACINTOSH: Q. Excuse me, sir, just let me —

MR. SMITH: A. Sure, I can explain it to you easier, to save you some time.

MR. MACINTOSH: Q. Well, let me question you a little.

MR. SMITH: A. Sure, go ahead.

MR. MACINTOSH: Q. So I'm going to put Ministry of Finance in that meeting in the category that are not saying "Let's get out and build that road, let's watch how much it costs."

MR. SMITH: A. Well, you're being unfair to the Ministry of Finance if you do that. That was one of their considerations, and I don't think you can isolate the ministries of government and the very competent staff the government has into people who walk around in little pockets immune to all the other considerations of public policy. One of the very heavy things that Finance was always concerned about was thrift and using the public's money wisely, that's absolutely correct, but they were not antagonistic to the expenditure of money, of course not. That's, part of the process of government is to build things and do things for people.

MR. MACINTOSH: Q. Do you remember that meeting?

MR. SMITH: A. No, I don't remember the meeting.

MR. MACINTOSH: Q. All right, but you probably attended as the representative of the Office of the Premier?

MR. SMITH: A. It's probable, yes.

MR. MACINTOSH: Q. And if you look a month later at Tab 7 in that same blue book you'll see an August letter, August 2nd, and it says again "Further to our Treasury Board submission 8/86 the ministry after further review with the Honourable Premier and Treasury Board wish to cancel the requests . . .", et cetera, and then if you go to the top of the next page we see justification, "The project planned . . .", and that's Coquihalla in part, ". . . are considered to be of the highest priority as outlined at the recent meeting" and it refers to the Office of the Premier again.

MR. SMITH: A. Yes.

MR. MACINTOSH: Q. It's probable that you had at least a couple of meetings at that time regarding Coquihalla.

MR. SMITH: A. No, what we had were meetings regarding these expenditures that you're talking about, the economic development initiatives.

MR. MACINTOSH: Q. Which includes Coquihalla.

MR. SMITH: A. Yes.

MR. MACINTOSH: Q. Okay.

MR. SMITH: A. I'm quite willing to accept that, if I'm allowed to finish my sentence I would have stated that effect. For your information at these meetings, these ones that you're looking at here that we're discussing, these economic development initiatives, in fact what happened was the Ministry of Highways had a number of projects, if I can have a look I can maybe recall them even, to see which isn't on there, but there were a number of projects which they have presented as part of the economic initiative package, which at that meeting, frankly I supported the Deputy Minister of Finance in our discussions to have them carved out. One of them was the six-laning of the 401 Freeway from the Port Mann Bridge in to Hastings Street, which a lot of people wanted for the opening of Expo, and the decision was taken that with the ALRT coming into place, I think that project was something in the order of magnitude of $80 million, that that project need not go ahead.

That's a very perfect example of what I'm talking about, but the ministry has always had that, or at least for a long time, had had that as an important priority, and that was one of them that in fact didn't go ahead. There were a number of others at that time. There were a number of other overpasses and the like on the 401 Freeway near Chilliwack which are still — the member for Chilliwack would be only too happy to tell you, which are still his priority, but which did not get built. At these meetings you're referring to it was those kinds of decisions that were taken. The list that was presented by Highways was in fact pared down to assist the considerations that the Ministry of Finance Deputy had with respect to some of the costs.

MR. MACINTOSH: Q. Well, Mr. Smith, I'm suggesting to you, sir, that in the summer of '85 you were a proponent of building Coquihalla and of getting it paid for and that you were urging the Ministry of Finance to take that approach, to get that highway built and paid for; fair enough?

MR. SMITH: A. Well in fact from back in the 1970's I was a proponent of the Coquihalla Highway, and I still am.

MR. MACINTOSH: Q. Right, and you were pushing the Ministry of Finance, urging them, coaxing them, suggesting, endeavoring to influence, take what word you will, you were urging that there be funding by the Ministry of Finance to pay for the Coquihalla, correct?

MR. SMITH: A. What I was doing was fulfilling my responsibility —

MR. MACINTOSH: Q. I didn't say you weren't. But were you —

MR. SMITH: A. I want to answer your question.

MR. MACINTOSH: Q. All right.

MR. SMITH: A. I was fulfilling my responsibility to the Office of the Premier to ensure that the public policy decisions taken by the Cabinet of British Columbia were fulfilled in a meaningful way, and that included the public policy decision that the Cabinet of the Province of British Columbia took at Cowichan Bay in April of 1984 to accelerate construction of the Coquihalla Highway.

MR. MACINTOSH: Q. So you've answered yes, haven't you?

MR. SMITH: A. What was your question? Sometimes I can't remember.

MR. MACINTOSH: Q. Well, with respect, sir, if you'd answer more succinctly the question will be easier to remember, and what I asked you was whether in the summer of '85 you were pushing to get the Ministry of Finance to pay to build the Coquihalla.

MR. SMITH: A. No.

[Transcript, p. 855-861]

And further,

MR. MACINTOSH: Q. "Mr. Smith, did you or didn't you suggest to Mr. Emerson projects to put on the back burner to get money to build the Coquihalla?"

MR. SMITH: A. "No, you see, that wouldn't be a function that I would undertake because that's a function, a decision that would has to be made by the Ministry of Highways and Finance."

[Transcript, p. 864]

On the same subject, Dr. Emerson, Deputy Minister of Finance and Secretary to the Treasury Board in 1985 and early 1986, testified:

MR. MACINTOSH: Q. Yes, and periodically Mr. Smith made representations to you as Treasury Board staff?

DR. EMERSON: A. Well, the relationship with Bud that I had was to the effect that they referred to me as Dr. Doom in the government because we're always preaching restraint and cautioning against the next recession around the corner and the need to save for a rainy day and all those wonderful things, so Bud was very much aware of Finance's attitude on highways and other expenditures. When it was determined that Coquihalla would [go] ahead, which was a very major capital expenditure, a commitment was made that we would look for other projects where we might be able to save on highway spending.

MR. MACINTOSH: Q. Right, and Bud Smith was involved in that?

DR. EMERSON: A. That's correct.

MR. MACINTOSH: Q. And Bud Smith was demonstrating to you projects that might be postponed for the time being to assist in the funding of Coquihalla.

DR. EMERSON: A. That was the general objective, yes.

MR. MACINTOSH: Q. Right, and lobbying, as I say, may be an indelicate word but he was there pushing Coquihalla.

DR. EMERSON: A. I can't answer that.

MR. MACINTOSH: Q. What part of it can't you answer?

DR. EMERSON: A. I don't know if Bud was a supporter or not of Coquihalla; it was a Cabinet decision.

MR. MACINTOSH: Q. I see, all right, fair enough, but I don't know, I'm not suggesting whether he was messenger or originator, but when he came to you he was urging that other projects be deferred so that there would be more funding for Coquihalla.

DR. EMERSON: A. Well you could turn it around and say that Coquihalla was a decision that had been taken and he was assisting us to find ways of conserving expenditures on other projects.

MR. MACINTOSH: Q. For the sake of Coquihalla?

DR. EMERSON: A. Yes.

[Transcript, p. 789-90]

Mr. Smith testified that he had no knowledge of the change of the Special Warrant from votes 69 and 74 into a Special Warrant for vote 69:

MR. MACINTOSH: Q. . . . Do you know that there was this change from two Special Warrants and two Votes into one Special Warrant and one Vote?

MR. SMITH: A. No, I did not until you — well, until I began to read about it in

the newspaper in connection with this Commission.

MR. MACINTOSH: Q. Right; have you had a chance to reflect on the consequence of what occurred when that was done?

MR. SMITH: A. No, I haven't.

MR. MACINTOSH: Q. You never considered the impact on the funding?

MR. SMITH: A. Since I've read them just now?

MR. MACINTOSH: Q. Any time?

MR. SMITH: A. No, I did not.

MR. MACINTOSH: Q. Since you started reading about it in the papers in connection with the Inquiry.

MR. SMITH: A. Well, in Kamloops we get the papers a day late, you know, the Vancouver Sun, and quite often I don't read it all in detail, we're too busy, we're doing a lot of things there, in fact we're developing our economy using the Coquihalla Highway as a major instrument.

MR. MACINTOSH: Q. Right, so this is all news to you today, is it?

MR. SMITH: A. Basically, yes . . ."

From the evidence, it is clear that senior staff in the Ministry believed that Treasury Board's authorization to call and award contracts was sufficient approval to proceed. They believe also that there was no reason for not transferring the expenses authorized under Vote 74 to Vote 69 part-way through the fiscal year. As Mr. Rhodes testified,

MR. RHODES: A. . . . I just want to put the fears to rest, that Highways had a mandate to construct a highway within a given time frame. To do this funds had to be appropriated, not by Highways, but by the financial resources of government to finance the highway on schedule.

The Ministry abided by all statutes and regulations with respect to the funding of the project. I think the documents we put forward this morning which are in this brief will attest to the fact that there was no effort on the part of Highways to hide anything or transfer anything, it was something that was directed from without, from outside the ministry. At no time were we out of control. We knew exactly what our cash flows were month to month. We made these known early to the financial authorities so that in the event we were going to be overextended we had some idea of what that amount would be and that they had time to make provision for it."

[Transcript, pp. 321-322]

Also on this subject Mr. Tom Johnson stated in an interview with Commission staff that he was of the same view as Mr. Rhodes:

TOM JOHNSON: A. We had also been authorized by the Treasury Board letters of that summer to undertake further work on Coquihalla, Phase 2 and 3, and Annacis and other projects.

MR. MACINTOSH: Q. Yes.

TOM JOHNSON: A. And based on that authority we had proceeded with that work.

MR. MACINTOSH: Q. Yes.

TOM JOHNSON: A. And when they gave us that authority, they told us to proceed with the work, and that to apply later for the cash when the cash flow determined it.

And on the transfer of expenses:

MR. MACINTOSH: Q. And as Deputy Minister, you did not see it as part of your role to investigate that change [between Vote 74 and 69]?

TOM JOHNSON: A. I explained before why that was not — that would not startle me because of the process under which the size of the Votes is not determined by the list of projects, but

the opposite, whereby the way in which the lists are finally priorized is determined by the size of the Vote.

The Commission cannot find that this transfer from Vote 74 to 69 was acceptable when it had the sole effect of making the project on-budget — by shielding prior decisions on significant additions to scope, and by altering the basis for reporting the project's total cost.

When all of the foregoing is added to the findings of Chapter 3, including the misleading news releases issued about the project, the Commission finds the financial reporting of the Coquihalla Highway Project to be tainted with an atmosphere of deceit and prevarication by both politicians and public servants.

The Commission has difficulty in accepting the lack of recall of Mr. Tom Johnson, the Deputy Minister who was responsible for implementing the transfer of expenses, preparing the list tabled in the Legislature, and some of the misleading news releases.

The Commission is surprised by Mr. Bud Smith's lack of awareness of the transfer of expenses. This lack is in contrast with his other testimony, which showed that he had detailed knowledge of the Coquihalla project from its beginning and that he had participated in the meetings which defined the Highways Supplementary Program 1985/86 and which had given rise to the Special Warrant. His evidence also showed that he maintained a current listing of the government's and MLAs' spending priorities for capital projects, and was, in his words, responsible "to the Office of the Premier to ensure that the public policy decisions taken by the Cabinet of British Columbia were fulfilled in a meaningful way, and that included the public policy decision . . . to accelerate construction of the Coquihalla Highway."

Finally, from the testimony of Mr. Hugh Curtis, the Commission concludes that the transfer of expenditures was known among those in government who made effective decisions on the matter.

The Award of Work Without an Appropriation

A second aspect of the financial administration of the Coquihalla project which the Commission believes to be contrary to both the principles of public finance and of sound project management was the practice of authorizing the Ministry to award contracts without an appropriation being in place either from the Legislature or through a Special Warrant. As the documents clearly show, in both 1984-85 and 1985-86, once decisions had been taken by Cabinet to proceed with work, the Ministry requested Treasury Board's approval to proceed, and Treasury Board gave its approval, asking that the Ministry apply for Special Warrants later as its cash-flow required.

The Commission cannot believe that the commitment to hundreds of millions of dollars by this means complies with either the spirit and intent or the plain meaning of the *Financial Administration Act*.

The Commission does not consider that the promise of a warrant is or ought to be the same thing as a warrant, either legally or in terms of project management. Nor does it consider that the use of promises of warrants as project authorizations is conducive to sound control and reporting of major projects. For a project to be tightly and properly controlled requires a clear budget established in advance. The budget should provide the yard-stick to measure performance and the discipline to achieve it.

The documents provided to the Commission show that each of the authorizations for the Coquihalla was increased between the time it was given and the time the warrant was requested. Mr. Hooper's Report, particularly his Schedules D and E, gives full details of the individual Coquihalla projects during fiscal 1985-86. Schedule D shows that many were recorded as being funded at the beginning of the year under Vote 74 and then once again in January 1986, under Vote 69. The Schedule also shows that some projects appear not to have been authorized under

either appropriation, although money was spent. Finally, the amounts actually spent during 1985-86 on these projects total $16-18 million more than the totals authorized under either Vote 74 or Vote 69. Schedule E further shows that the projects authorized by Treasury Board to be called and awarded under Vote 74 'over-ran' by some $67 million during the year. This form of authorization, funding and reporting cannot have as its aim the presentation of clear and concise accounts, neither does it show firm control of expenditure.

The documents provided to the Commission show that Treasury Board was aware of, and concerned about, the Ministry's practices for budgeting, reporting, and cost monitoring. Mr. Curtis wrote to Mr. Fraser on April 14, 1986, asking that a "new approval and control process for the highway construction budget be set up" by the two Ministries' staffs. The new process was outlined. It included a Cabinet review of the year's capital projects, tracking the total project estimates and costs over a number of fiscal years, and quarterly reports from the Ministry on actual and forecast expenditures. To the Commission's knowledge this was never acted upon.

Further, as the chronology showed, in granting Mr. Fraser some of the spending approvals, Mr. Curtis let Mr. Fraser know that his Ministry's voted appropriations were not to be exceeded. With the Ministry's invariable underestimation of the final costs of its grade construction contracts (as seen in Chapter 4) there was clearly a need for both the Ministry and Treasury Board to exercise vigilance.

Each time that Treasury Board authorized the Ministry to undertake significant new work and to apply later for a warrant, it, in effect, gave the Ministry an open-ended account upon which to draw. From the series of documents it can be seen that the amounts envisaged always increased, as follows:

1984/85 — October 19, 1984, envisaged $93 million
— Warrant issued totalled $120 million

1985/86 — August 2, 1985, envisaged $42 million
— December 9, 1985 envisaged $62 million
— No Warrant issued as expenses transferred to Vote 69

The Commission believes that the invitation to draw privately against an open-ended account is poor management practice no matter whether it is legal or not. For the Coquihalla, it meant that no budget target was established against which to report the project; that significant additions to the project's scope were made without public knowledge or scrutiny; and that it set up a system which invited the manipulation of project definition and accounting in order to keep up appearances that were absolutely contrary to reality.

The Commission has no doubt that the cost and conduct of the Coquihalla would have been different had Treasury Board required that an appropriation by the Legislature or by a Special Warrant be in place prior to the Ministry contracting work. This requirement would have brought the Coquihalla project under a more systematic and continuous review of scope, schedule, costs and need than was given by Treasury Board's intermittent review of spending requests; by Premier's office staff keeping lists and consulting on priorities; and by Treasury Board staff trying to ensure that the "lid" was kept on the Ministry's total spending.

Testimony from Mr. Roy Illing advised the Inquiry that the Ministry has been told that it is not to expect Special Warrants to be issued in future to supplement its voted appropriations, and that it is to govern its work and expenditures accordingly. The Commission notes that a number of Mr. Curtis' letters during 1985 and 1986 also advised that expenditures were to be kept within voted amounts. However, it is hoped that this new direction will give the Ministry incentive to keep its expenditures

within its appropriations. But this is not enough; in conjunction, management measures must be taken to ensure that cautious parsimony does not replace open-ended accounting and that the Ministry's effectiveness is not reduced. The Commission's review of practices and procedures leads to recommendations for a more systematic approach to budgeting and project control, to ensure not only that expenditures are kept within appropriations but also that authorized work continues to be done and full value received.

Conclusions

From all of the evidence — testimony and documents — on matters of authorization and reporting of the Coquihalla Highway, the Commission finds:

- the legislature was avoided
- the legislature was misled by the documents presented to it
- the true costs were not reported in a forthright way
- the project was redefined part way through and expenses transferred from Vote 74 to Vote 69

These deliberate and planned actions were politically motivated and were designed to give the impression of good overall budgeting and, specifically, that the Coquihalla Highway was on budget. The political decisions were implemented by senior administrators who could not have been unaware of their purpose.

The *Financial Statements*, the Ministry Brief, and the *Auditor General's Report* did not reveal the transfer of costs from Vote 74 to Vote 69.

The Commission's terms of reference directed inquiry into the Ministry's practice and procedures in the administering and reporting of projects. This it has done and is satisfied that the reporting irregularities documented here did not originate within the Ministry of Transportation and Highways.

The Commission finds that its terms of reference do not permit it to make any further inquiry.

This inquiry into authorization and reporting has clearly shown that neither the Ministry nor Treasury Board had an adequate system for authorizing, controlling and reporting the Coquihalla project.

Control over the project scope was non-existent, with major changes and additions made without any documentation or formal approval.

This should be changed. The next Chapter discusses practices and procedures and leads to recommendations which, if implemented, will accomplish this.

However, the primary requirement for proper management of capital works by government is funding approval by and accountability to the Legislature.

Legislative responsibility for expenditure is best stated by a quote from *Improving Accountability*, by J. J. Kelly and H. R. Hanson, published by the Canadian Comprehensive Auditing Foundation in 1981, p. 3.

> "As Gladstone pointed out in the British House, 'It is undoubtedly the business of the [Legislature] to be responsible not only for the inception of all public expenditures, but also to follow the money raised by taxation until the last farthing is accounted for'."

If all of the estimates and costs of the Coquihalla Highway had been reported correctly to the Legislature and to the public in a timely and accurate manner, one wonders whether funding would have been provided for its completion on the schedule and to the standards that it was built.

CHAPTER 6

Practices and Procedures

Introduction

The terms of reference direct the Commission to examine the standards and practices of the Ministry of Transportation and Highways in costing highway projects and to investigate the procedures followed in administering and reporting on such projects. This work is to be reported together with recommendations. From its investigations of the Coquihalla project, the Annacis project and other more "normal" highway construction projects, and having given consideration to all relevant information from its hearings and documents, the Commission has identified a number of areas where conclusions can be drawn and recommendations for improvements can be made.

In particular, from the documentary evidence and testimony it is evident that:

System Planning

- There is no comprehensive long-range highway capital plan for the province;
- The selection of capital projects for construction is not based on any identifiable objective criteria, system of assigning priorities, or process of review;
- Highway planning is not integrated with overall transportation planning.

Estimates

- Project estimating procedures are haphazard, inconsistent and *ad hoc*, do not evaluate risk and are not documented;
- Estimates of total cost for multi-year capital works are a low priority;
- Estimates of current annual expenditures are a high priority from a 'cash-flow' standpoint;
- Estimates of annual expenditure are not related in any objective manner to expected accomplishment;
- There is no systematically collected and analysed data for use in preparing estimates.

Project Implementation

- Major capital works are not designed, approved, or undertaken on an overall project basis;
- There is no formal decision-making process for progressive refinement of a project's cost, scope or schedule from initial assessment to completion.
- Contract documents are deficient and need to be revised;
- Financial reporting is not integrated with project reporting.

Management

- There is no integrated management system for design, budget, construction, cost control and cost reporting of capital works.
- There is lack of coordination of activities between various divisions of the Ministry with a consequent failure to fully utilize available resources;
- There is no method of comprehensive project audit or operational review.

The following sections address each of these areas in detail.

Before proceeding it is important to understand clearly that the mission of the Operations Department of the Ministry of Transportation and Highways is to construct, operate and maintain highways with a heavy emphasis on the management of design and construction of capital works. Government and the public must appreciate that this mission can only be accomplished effectively by experienced and dedicated professionals working within a system that encourages and rewards initiative. Further, effective management of capital works requires the ability to make quick and accurate decisions, and management control systems must provide for this. The Commission can not emphasize too strongly that it would be wrong to impose any accounting, reporting or organizational system that frustrates this ability.

Accordingly, the Commission is concerned in making recommendations that change be implemented in a manner so as to enhance the overall effectiveness of the Ministry of Transportation and Highways and not simply as a reaction to recent events.

System Planning

The Ministry's capital plans for the development of the highway system are contained in a variety of internal Ministry reports. From information given the Commission, these reports are for single fiscal years as well as for a period of five years. However, the reports are not formal planning documents but can be described as being more in the nature of "wish lists" of potential projects. The projects are listed by electoral district without any great level of detail and without a statement of need or project scope.

This planning procedure might be suitable for small capital projects and for distributing highway work around the Province. It is, however, totally inappropriate for major capital works involving hundreds of millions in expenditure.

An orderly comprehensive planning process is a requirement not only for the development of capital plans but also to ensure that these plans are carried out in the most effective and efficient manner.

This matter was referred to in the evidence to the Inquiry by Mr. Jim Lippert representing the Operating Engineers, Local 115, Teamsters Local 213 and the four locals of the Labourers Union who operate in the road building industry in British Columbia:

> "A long-term planned process that would allow for proper pre-engineering, proper soil studies, and proper layout of the work, and therefore give not only a stable industry to the Province, but cheaper costs in the end to the taxpayer.
>
> We submit that such a defined program would allow the Ministry to develop the continuity in the engineering services, allow the contractors in the industry an opportunity to plan for the future, instead of forcing them to react to the present, and both will provide better roads at lower prices."
>
> [Transcript, p. 131]

And further, Mr. Dennis Hall, President of the Roadbuilders Association, representing 80 companies active in British Columbia's industry:

> "This is where the Association feels that a five or ten year construction program would be a benefit in that the Ministry would have had ample opportunity to have the predesign and quantity surveys scheduled in a manner that would not have been extraneous to their own staffing problems."
>
> [Transcript, p. 38]

And more, from an independent professional engineer, Mr. R. J. Blakely:

> "My submission, sir, would be that it's the climate of the development of these projects which is worthy of examination . . .

> I refer to the absence in this Province of any provincial highway development plan that is publicized. There may be a plan in the back room secreted away in a bottom drawer. Possibly that is the case. But, there is not a public highway development plan which incorporates a strategy for priorizing objectives and which allows the public, I know this is getting away from cost overruns, but the public to appreciate the context in which the decisions are made by Cabinet, to initiate a specific project.
>
> I suggest also that this lack of a plan and a strategy means that Ministry staff must always be following decisions which are made in the confines of the Cabinet based on who knows what criteria, no doubt political considerations reign supreme, not to say that broad economic and social goals are not examined, but only to say that we the public, the communities involved, and the many diverse interests throughout the Province that are affected have no way of knowing what the broad framework is.
>
> Ultimately, I suggest this secret process, and the opportunity for Cabinet to set unrealistic deadlines, reflects down into the situation that we have with the Coquihalla today, and of cost overruns."
>
> [Transcript, p. 136-137]

Properly conducted planning is also a powerful management tool for determining and carrying out the objectives of an organization and for cost-effective investment. Short and long-term planning is necessary in order to properly determine what could be done, what should be done, and to properly allocate resources. For highways, this ought to be a comprehensive highway plan within the framework of overall transportation planning for the Province.

Effective long-term plans will be ineffective unless committed at the highest level. In order to involve the highest level, the planning process needs a well-thought-out development plan with appropriate statements of needs, how the proposed parts of the plan will meet those needs, and a clear statement of the scope of each of the projects within the plan. This information would place government in a position to make more appropriate decisions; indeed, it has been seen that without it, multi-million dollar decisions are made based on totally inadequate information.

Estimates

Estimating the cost of capital construction projects is not an exact science and depends heavily on the estimating procedures, on the quality of data available, and on the experience, training and judgement of the estimator.

Nevertheless, accurate estimates of costs are essential to good decision-making and any organization involved in the development, design and construction of capital works needs the capability to provide sound and accurate cost estimates. These estimates are needed for a variety of purposes: to compare broad alternatives; to select between alternatives; to establish design criteria; to aid in deciding whether a project should proceed; to inform those who are responsible for allocating funds; and finally, they are necessary in order to establish a base upon which to build budgets for use in managing and controlling a project.

To be useful in decision-making, the cost estimate of a proposed capital project should be an estimate of the most probable final cost based on information available to the estimator at the time of the making of the estimate. There are uncertainties and risks inherent in most civil engineering works which are progressively resolved as the project develops from concept through detailed design to construction and completion. Accordingly, estimates made at various times during the life of the project have varying degrees of uncertainty. This uncertainty needs to be provided for in the estimates. Provision can be, and often is, made by a contingency allowance, or alternatively by statistical methods providing upper and

lower boundaries within which are contained the most probable cost.

The Ministry of Transportation and Highways does not have a rigorous estimating procedure. There is no Ministry estimating manual or set standards nor are there any formally kept statistics of past work or bid prices which are available throughout the organization. Rather, the Ministry estimates are made on an "ad hoc" basis. Most are made in the Design and Surveys Branch, but some are made by the Executive in response to requests from the Minister or others. No estimate reviewed by this Commission contained adequate provision for uncertainty.

Purpose of Ministry Estimates

Estimates of costs are made within the Ministry for a variety of reasons. Estimates are made at the corridor study stage in order to determine feasibility and to select potential highway corridors. These estimates are usually parametric or comparative in that they are based on the parameter of cost per mile or per kilometer. Sometimes, as in the 1973 Mantle Report for the Coquihalla corridor study, an alignment is selected from uncontrolled mapping and a cost estimate is calculated from estimated quantities and unit prices.

The corridor or preliminary estimates are sometimes updated by applying an index based on changes in some standard cost index or sometimes updated by more detailed determination of quantities and current unit prices. These estimates usually do not provide explicitly for right-of-way costs, engineering overhead, or contingencies.

Other estimates are usually made at the time of tendering each contract. These estimates are based on the tendered quantities with the estimator entering his estimates of probable unit prices. These are used for the purpose of evaluating the bid prices to give the Ministry an indication of whether the bid prices are realistic. If the bid prices are substantially different from the Ministry's estimate, a review is made to determine the cause before the contract is awarded; as a rare occurrence, the design might be reviewed and the project re-tendered. There is no systematically collected and analyzed data for these estimates.

The estimates of greatest concern to the Ministry's executive and financial staff are those made of the annual capital spending. These estimates are for submissions to Treasury Board for the annual appropriation for the Ministry's capital program. Again, these are usually initiated in the Ministry's Design and Surveys Branch, but are considered by the Ministry Executive before becoming part of the final Ministry submission. These estimates are compiled from the estimates for individual capital projects but, more importantly, are the Ministry's estimate of the total amount of money to be spent on capital projects during a single fiscal year.

As Ministry staff advised, once the total amount of money available for the year had been determined, then the individual projects, together with their estimated annual spending, would be reviewed to determine the list of construction to be done in the year ahead.

All of the above Ministry estimates are subjective in that they depend for their accuracy solely upon the experience, memory and judgement of the estimator. No use is made of systematically collected data from previous work. These estimates are not all-inclusive in that they seldom, if ever, provide for right-of-way acquisition and engineering overhead but are more related to direct construction costs. None of the above-noted estimates provides explicitly for uncertainty, or became the basis for a project budget.

The Ministry's estimating practices and procedures need to be revised. The majority of estimates now made, except for pre-tender estimates, are not estimates of the most probable cost but rather of the minimum cost — one which has a 100% probability of being exceeded. The Ministry needs to develop an estimating procedure that is systematic across the

Ministry, that relies on good data, that contains provision for uncertainty and provides estimates that are quantified as to probable accuracy. All estimates need to be carefully documented.

For reliable estimates, historical data needs to be recorded, analyzed and converted to usable form. The Ministry has within its files sufficient information to develop the necessary data bases to make good estimates. Collection of this information needs to be systematized so that the base is current and reliable. The development of estimating procedures is a simple task and those procedures can be made of universal application throughout the Ministry.

The Tender Process

Capital construction work is, in the case of public bodies, almost universally contracted for by publicly advertising for tenders. When the tenders are received by the owner, they are opened in public at a predetermined time and place, and a contract is awarded to the lowest bidder who meets the requirements of the tender documents.

In this regard the Commission heard submissions questioning the practice of awarding the contracts to the lowest bidder.

From Mr. Colin Snell, B.C. Provincial Council of Carpenters:

> "That this Commission recommend . . . that the adherence to the low bid at all cost policy be scrapped."
>
> [Transcript, p. 90]

And from Mr. David Weller, B.C. Construction Association:

> "I've heard through some of the submissions to your Inquiry, the use of the term 'low bidder at any cost', and I would like to make it very clear that in the dealings with the construction industry with government it is the lowest qualified bidder who has fulfilled all of the requirements of the tender documents who should be awarded the project, which is, if I may say somewhat different than low bidder at any cost . . .
>
> Competition is the equalizer in our industry. Competition is our strength and weakness concomitantly . . . "
>
> [Transcript, p. 142–3]

In the Commission's opinion, acceptance of any other offer than that of the low tenderer who has met all of the requirements of the tender documents in a public tendering process is inappropriate and immediately raises problems of public accountability. However, so that competition is assured and valid contracts result, it is essential that the owner provide complete information about the financial and other qualifications required, and about the scope of the work to be done. In the case of unit price contracts accurate estimates of quantities must also be supplied.

The Ministry almost exclusively uses Unit Price Contracts. As stated in the Ministry Brief:

> "The use of "unit price" contracting has been the standard for highway construction projects in British Columbia for many years, as it is in other North American jurisdictions. The reason for this is the impracticability of defining the work so precisely as to allow the contractors to bid a fixed price. Neither the Ministry nor the contractor can know in advance what hazards, difficulties or conditions may arise during the life of a contract. This is especially true in mountainous terrain. The unit price system (discussed in Section III.3.c) ensures that when additional work is required — and it usually is — compensation is paid on the same basis as was originally contracted."
>
> [Ministry Brief, p. 2]

However, Unit Price Contracts are supposed to operate as a firm price contract with the total bid price made up of the sum of the unit prices multiplied by the

estimated quantities. The use of unit prices provides for the inability to define exactly the amount of work to be done. But nevertheless, the estimated quantities must be reasonably accurate or else the system fails.

If the contract is not designed so that actual quantities are reasonably close to estimated quantities, or if the information on which the contract is based is so vague or uncertain that quantities cannot be reasonably defined, then the validity of the tendering process is lost and the contract itself becomes an illusion — merely an agreement to negotiate.

As noted before, the estimated quantities in the Ministry contracts tend to be minimum quantities, and for grade construction contracts are, for most contracts, certain to be exceeded. In the Commission's opinion, this is an unacceptable practice. It leads to large overruns on some items and is an open invitation for contractors to "unbalance" their bids by making their own assessments of quantities and, in effect, "gambling" on the actual quantities.

These matters were referred to extensively in Mr. Tribe's evidence and are referred to in Chapter 3, Unit Price Contracts. The point to be noted here is that to ensure the validity of the process and the contract, the estimated quantities must be reasonably close to the actual quantities.

There are techniques to accomplish this which include, amongst other things, modification of the bid item breakdowns, and replacing theoretical quantities with statistical information and experience from previous work to develop realistic quantities.

Project Implementation

Effective administration of construction contracts requires a combination of experienced personnel, proper contract documentation for both specifications and general conditions, along with well understood and consistently applied procedures. The contract documents must be structured in such a way that the provisions, when enforced, are fair, that risk is appropriately shared between the owner and the contractor, and that the contract can be administered on a day-to-day basis within the provisions of the document.

As the detailed review of the Coquihalla and other projects showed, major capital projects are not designed, budgetted, approved or undertaken on an overall project basis. This, it has been seen, leads to poor control over total cost, scope and schedule. For multi-year projects, financial reporting and control become difficult to achieve.

Contract Documents and Administration

The Ministry has experienced construction personnel. However, the contract documents make it virtually impossible to administer the contract as written. Even a cursory examination of the documents reveals clauses which are so patently unfair that they are not enforced. This leads to the inevitable result that those charged with administering the contracts on a day-to-day basis develop, in effect, informal and *ad hoc* procedures. For an organization operating continually over the Province as a whole this should be remedied.

Contract documents need, first of all, to describe clearly what is to be done and second, to set out the legal and administrative framework and rules which will govern the contract. The first part is the specification for the work and the second part the general conditions of the contract. The documents need to be fair to the owner and the contractor. They need to share the risks in an appropriate manner, placing on the contractor only those risks which are under the contractor's control and legitimately the contractor's responsibility. They need to provide for the inevitable claims and disputes and set out

how these will be fairly dealt with. They need to be enforceable at law. And finally, and most importantly, for an organization that is continuously contracting for capital works, the contract documents need to be capable of universal and uniform administration.

The matter of the Ministry's contract documents was referred to in Mr. Tribe's evidence and in his report where he states:

> " . . . A review of the contract document reveals that it is a totally inappropriate document, in fact in our opinion so inappropriate so as to be unenforceable. As a result, the Ministry supervisory staff and management are forced to take on a godlike role in order to make the document workable. The document in its present form cannot be administered in a universal manner."
>
> [Tribe—Appendix C]

The documents need to be rewritten. The Commission is not aware of examples readily available, but the need presents an opportunity for the Ministry, as the largest continuing contractor for capital works in the Province, to make significant improvements at very little cost. In undertaking this work, the Ministry should feel confident that it has the support and can drawn on the knowledge of many in the contracting, road building, and project management communities in the Province. Participants at the Commission's hearings, including the Roadbuilders, the Project Management Institute, and the Construction Association of British Columbia all showed their expertise in the area of contracting and their willingness to assist in any way possible.

Reporting

The purpose of a capital project cost reporting system is first to give project management and executive management timely and accurate information on which to base action to ensure effective cost and scope control. Secondly, a capital project cost reporting system should give management — and in the case of a public body, government and the public — an opportunity to measure performance. For in an effective organization, "performance should be made square with promise," as Theodore Roosevelt once said.

The Ministry system for reporting the costs of capital projects in a timely and accurate way is at best fragmented and inconsistent. The Ministry's formal reporting system for capital works is limited to its *Annual Report*. This report, amongst other information, documents all appropriation and expenditures during a single fiscal year, by Vote and by Electoral District and details within each Electoral District expenditures for day labour and contract work. The report also includes a listing of contracts with a statement of the percentage complete. However, nowhere is a project or contract which extends over more than one fiscal year reported as a total cost, nor is there any reporting of total project costs against estimates or budgets.

To accomplish its purpose, a capital project cost reporting system must not only report expenditures but must report them against actual and projected accomplishment. More importantly, because only future cost can be controlled, the system must continuously and accurately project expenditures and all anticipated costs to completion of the project.

The existing Ministry systems are not designed to provide appropriate management information or to produce meaningful reports. These systems, from the raw data to the final reports, need to be reviewed and revised.

Project Management

Project management, as the name implies, is the management of a project — a planned undertaking with defined boundaries and a clear objective. A project is not an ongoing activity but rather has a defined beginning and clear objectives

leading to a defined ending.

The development and implementation of a capital work is a project and its implementation, particularly, lends itself to the established principles of project management. Those principles are readily available and need not be repeated here except to say that the primary requirements are clearly defined responsibility, objectives and control of scope and schedule and cost. Progress needs to be continuously monitored and compared with the requirements or objectives so that corrective action, if necessary, can be taken sufficiently early.

In his evidence and his report, Mr. Tribe referred to the necessity for the Ministry organization to be set up so as to accommodate a project approach to capital works:

> "If future large projects are to be performed within the Ministry, the organization must be set up so as to accommodate a project team approach for the total project life cycle. This starts with the ability to vest all responsibility in a single project manager. In addition, the supporting organization must be assigned to the project on a full-time basis and report up through to the project manager. Since these projects represent the single highest variable component within Ministry's budget, the project manager must report to a senior level within the Ministry.
>
> During our investigation there did not appear to be evidence of any senior managers possessing strong *project management* skills. Because of this, consideration should be given to the recruitment of a project manager possessing the requisite experience and skills. The emphasis must be on the project management skills necessary to *manage* a large capital expenditures program. This should not be confused with construction and/or construction management.
>
> Policies and procedures must provide for authorization limits and authorities that allow the project manager to operate effectively."
>
> [Tribe—Appendix C]

And further, on project control and reporting:

> "A Project Control group must exist either in the project or as an independent group within the Ministry. The group must report to a senior management level. Unlike an audit function, the primary purpose of the group shall be to forecast the position of a project such that corrective actions can be taken. This group would also be responsible for ensuring the project reports and conducts its affairs within the approved policies and procedures.
>
> Strong consideration should be given to the establishment of a central estimating section within this group.
>
> To complement this group, a comprehensive computerized project management system should be sought out and implemented."
>
> [Tribe—Appendix C]

Similarly, Mr. Illing in his evidence stated:

> "The second thing, and a very, very important point in my view, is a totally integrated approach to project management of large projects. The Ministry, principally I think because of the close working relationship that's existed for many years between many competent staff and the style of management has not operated with a one person project management direction on major projects. I believe, and I know that Mr. Elston and Mr. Limacher believe, because we have had extensive discussions on it, that this is not only desirable, it's mandatory for future management of major projects.
>
> And that means that early on in the game somebody will be responsible for all aspects of the project. The estimates and achieving of the cost. . . .
>
> . . . It was not easy or, indeed, possible

to identify one person who was totally accountable for the project, other than perhaps the Deputy Minister who, of course, has many other things to do."
[Transcript, p. 564–5]

As part of his evidence Mr. Tribe entered a typical project management organization chart shown as Figure 16.

This Figure shows the basic elements of a project management organization, that is, integration of all of the functions and responsibility under a single person — the project manager. Options exist about how the control and financial reporting systems will work, whether they are integrated with the overall systems of the Ministry or developed solely for the purpose of the project. This should depend to some extent on the overall scope and length of time of the project, and for both this and where the Project Manager reports within the Ministry, the chart is only for purposes of illustration.

The Ministry should undertake examination of project management in relation to capital work and develop procedures following the well-established principles of project management.

Project management need not be limited to large capital works — the principles can be applied to the development and implementation of all capital works.

Organization and Management

The Ministry of Transportation and Highways is a large and complex organization with functions besides development and implementation of capital works. The organization chart for the Ministry is included in each Annual Report and shows the broad scope of the organization. The largest part of the organization is the Highway Operations Department. This is responsible for capital works, but also includes the Operational Services Division with responsibilities for the day-to-day operations of the provincial highway system. This Inquiry is not going to try to reorganize the Ministry; however, the Commission will make some comments on the overall organizational structure, will make recommendations for review, and will make some specific recommendations about the Construction and Engineering Divisions.

The overall organization shown on the Ministry organization charts has been "unbalanced" in that the preponderance of the personnel and budgets resides in the Department of Highway Operations. The Assistant Deputy Minister in this department is responsible for budgets, functions and personnel greater than most Deputy Ministers in other ministries of government. The Operations Department is essentially what was the Department of Highways before creation of the Ministry of Transportation and Highways. The recently-announced organizational changes have divided this department and give the opportunity for the development and implementation of capital works as a single focus within the Ministry.

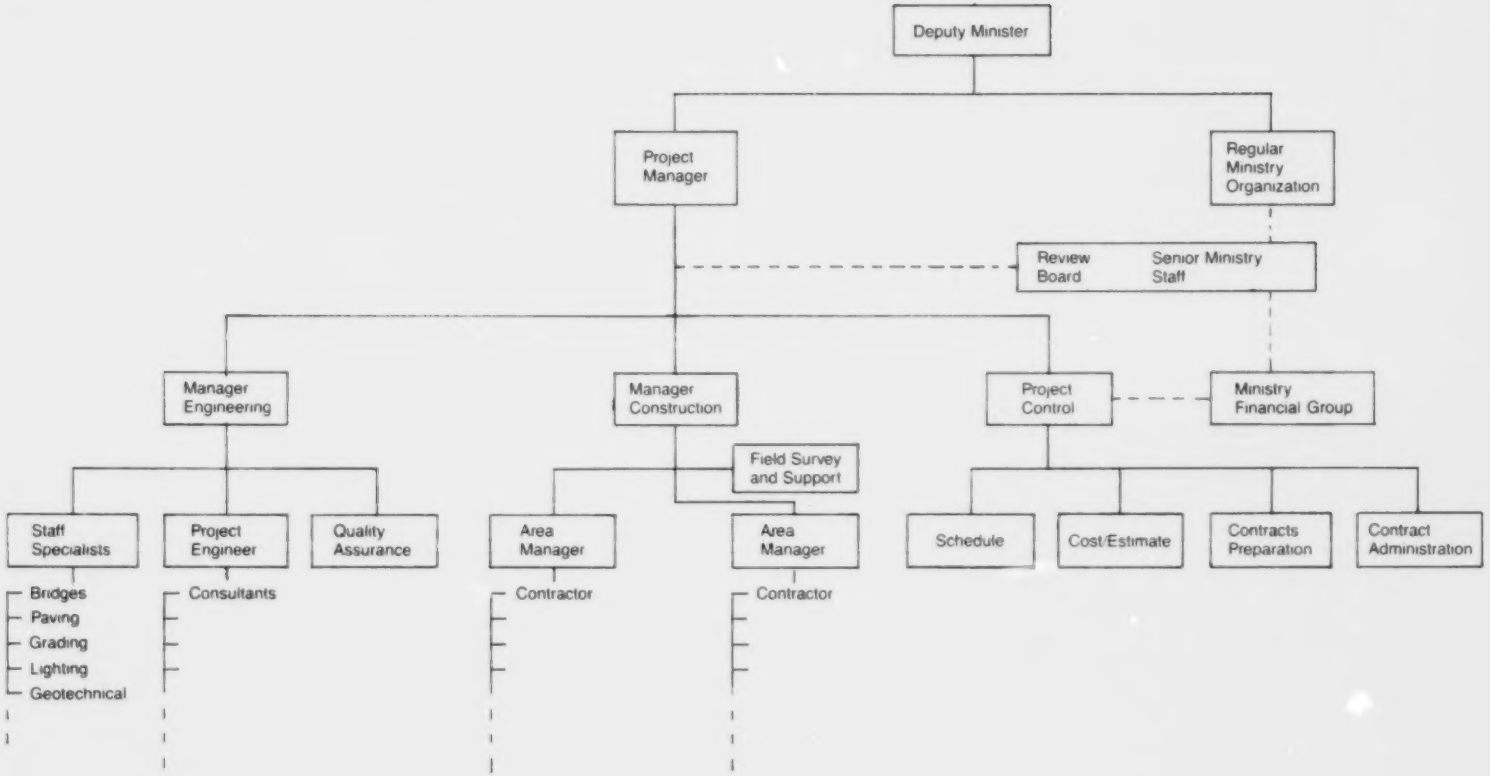
The Transportation Policy Division was apparently created to be responsible for the development of overall transportation policies for the Province. However, it appears to have little contact with or influence on those who develop highway plans. A strengthening of the relationship between transportation policy and highway planning leading towards a truly comprehensive transportation planning function for the Province would be worthwhile and, the Commission believes, cost-effective.

Turning now to the part of the Ministry that builds roads. The management of this department can be characterized as hands-on, operationally-oriented, "get things done". Because of its strength and the strength of its personnel, other parts of the Ministry, notably the Administration and Services Department, have become subservient to Operations.

However, from a modern management perspective the Ministry's capital works cannot be characterized as well-managed. The primary objective appears to have been to build more and bigger highways. This the Department has done. But there

Fig. 16

Example of Typical Project Management Organization Chart



are deficiencies both in the management process and the organizational structure.

Improvements can be made in both process and organization through: better long range planning for both facilities and capital requirements; development of capital plans accompanied by statements of scope and need; development and documentation of performance standards for individual managers; development or updating of policies and procedures necessary to guide and direct personnel; encouragement of consistency of management style from division to division; better coordination of effort between divisions; implementation of a timely, accurate, management information system, particularly in reference to financial reporting; determination of the role and responsibility of the Administration and Service Department; implementation of formal co-ordination between Transportation Policy and Highway Planning.

The Commission is of the opinion that a proper professional review should be conducted of the entire organization. The Commission is further of the opinion that the most effective way to conduct this review and to implement necessary improvements is for the review to be carried out by a task force under direction of the Deputy Minister with appropriate outside advice and assistance as required.

To be effective, changes in the Ministry's practices, procedures, and organization must be matched by changes in the Government's process for determining what work is to be done. Recommendations in this report address both of these requirements.

Mr. Pankratz of Clarkson Gordon, who has assisted the Commission in its consideration of the opportunities for strengthening the organizational structure, systems and practices of the Ministry, conducted a brief overview examination and has reported his findings and recommendations in a letter report which is included as Appendix F.

Terms of reference for this review of the Ministry require careful consideration. In the Commission's opinion the terms of reference should, as a minimum, include:

- Definition of Departments and Department roles;
- Co-ordination at all levels;
- Personnel practices
  - — Succession planning
  - — Management training
  - — Performance appraisal
  - — Identification of management potential;
- Management information and reporting systems;
- Established policies and procedures;
- Decision making and approval processes;
- Manpower requirements, in particular support for the Deputy position;
- Requirement for an Internal Audit and operational review function;
- Senior management remuneration.

In the Commission's opinion, such a review can and should be effectively carried out and completed within six months.

Conclusion

This Commission is not the first to have the opportunity to recommend change. The Hon. G.E. Tritschler, in his 1979 Commission of Inquiry into Manitoba Hydro stated:

> "The Commission is well aware that what is done is done and cannot be reversed. We can, however, learn from history. We can suggest changes in practices and procedures to help ensure that [the organization], in pursuit of its mandate, does so in the most effective manner and that it is properly accountable to Government and through Government to the people of [the Province]."

Making positive and constructive changes in a large and mature organization can be a difficult task. There is a human resistance to change and a fear of the unknown. The Ministry has had a reputation for high morale; it has "gotten things done"; it has a record of accomplishment which is publicly visible everywhere in the Province.

The Commission believes that the process of change must build upon these positive strengths in a planned and methodical way. The benefits of change need to be shown. Uncertainty must be minimized. Respect for the individuals must never be lost. Government's desire to do things differently must be assured. The clear objective must be to build an organization serving the needs of government and the people of the Province, now and in the future.

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H-9	Summary of 1985-86 Special Warrant Project Authorizations — Highway Capital Construction — listing tabled in Legislature — March 26, 1986	A 96
H-10	*Annual Report*, Ministry of Transportation and Highways — 1985-1986, pp. 37-38	A 102
H-11	*Annual Report*, Ministry of Transportation and Highways — 1985-1986, pp. 279–87	A 104
H-12	Ministry Organization Chart — Coquihalla Design Phase	A 108
H-13	Ministry Organization Chart — Coquihalla Construction Phase	A 109
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APPENDIX A-1

PROVINCE OF BRITISH COLUMBIA

ORDER OF THE LIEUTENANT GOVERNOR IN COUNCIL

Order in Council No. 1546 , *Approved and Ordered* JUL 31 1987

Lieutenant Governor

Executive Council Chambers, Victoria JUL 29 1987 Amn. 1956/87

On the recommendation of the undersigned, the Lieutenant Governor, by and with the advice and consent of the Executive Council, orders that

1. A commission be issued under Part 2 of the *Inquiry Act* appointing Douglas L. MacKay of Vancouver as a commissioner to inquire into and, on or before September 30, 1987, to report on the costs of construction of the Coquihalla Highway, to compare the total costs incurred on the project and each phase of it with the total estimated costs and estimated costs of each phase, to determine the rationale for any differences where they may occur and report on the justification for those differences, and without limiting the generality of the foregoing, but as an aid to the investigation, the commissioner is authorized and directed

(a) to inquire with respect to any other recent highway construction project that appears to have significant variations between the actual and estimated costs of construction and to report with comparisons, and

(b) to examine the standards and practices adopted by officials of the Ministry of Transportation and Highways in costing highway projects, to investigate the procedures followed by that Ministry in the administering and reporting on such projects, and to make such recommendations for such change as the commission considers appropriate in the circumstances.

2. The remuneration and allowances of witnesses who are required for the purposes of the commission, in respect of mileage and maintenance and other incidental and necessary expenses, including travelling expenses, be on the same scale as provided in the Rules of the Supreme Court of British Columbia.

3. Consent is given to the commissioner appointing clerks, stenographers and research assistants as he considers necessary for conducting the inquiry and to pay them at the rate or salary that is equivalent to the rate or salary paid to employees in similar positions in the public service and the commissioner may appoint or retain such consultants or advisors as he considers appropriate and the commissioner may establish rates, fees, living and travelling expenses to be paid such positions.

4. Subject to appropriation, approval is given to government to pay all expenses incurred by the commissioner in the inquiry and which are considered necessary by the commissioner for the proper carrying out of his duties.

5. Remuneration of the commissioner is set at $500 for each day of involvement in the enquiry. Living and travelling expenses be paid to the commissioner equivalent to the rates paid to Group III managerial employees in accordance with Treasury Board Order 88, and that clerks, stenographers and research assistants and similar employees be paid equivalent to the rates paid to Group II employees in accordance with the said Orders, for each day during which they are engaged in the performance of the powers and duties of the commission.

Provincial Secretary and Minister of Government Services

Presiding Member of the Executive Council

The reporting date contained in Order in Council 1546/87 was extended to 7 November by Order in Council 1956/87 and to 31 December 1987 by Order in Council 2235/87.

APPENDIX A-2

Commissioner's Oath of Office

I, DOUGLAS L. MACKAY

swear that I will truly and faithfully execute the powers and trusts vested in me by His Honour the Lieutenant Governor in Council, under the Inquiry Act, according to the best of my knowledge and judgement.

SO HELP ME GOD.

Douglas L. MacKay

SWORN and subscribed by the said DOUGLAS L. MACKAY at Victoria, British Columbia, this 11th day of August, A.D. 1987, before me -

APPENDIX B-1

Dates, Locations and Submissions to Commission Hearings

31 August, Kamloops

International Union of Operating Engineers

Town of Merritt

B.C. Roadbuilders and Heavy Construction Association

Kamloops Chamber of Commerce

1 September, Vancouver

Project Management Institute

The Roadbuilders Association

The Carpenters Union 41

B.C. Government Employee's Union

Union of Operating Engineers, Construction and General Workers Union, Tunnel and Rock Workers Union and International Brotherhood of Teamsters

William J. Blakely

14 September, Victoria

B.C. Construction Association

Jim Ferguson

The Ministry of Transportation and Highways

Michael Harcourt, M.L.A. Leader of Opposition

Western Integrated Electrical

APPENDIX B-2

Listing of Witnesses at Commission Hearings

SPONSOR/ AFFILIATION	WITNESS	TRANSCRIPT PAGE No.
31 August, Kamloops		
Union of Operating Engineers, Construction and General Workers Union, Tunnel and Rock Workers Union and International Brotherhood of Teamsters	Jim Lippert	11
	L. Gardner	11
The Town of Merritt	George Krasnuik	26
	Leo Den Boer	26
B.C. Roadbuilders and Heavy Construction Association	Dennis Hall	30
	Ivan Hanshard	30
Kamloops Chamber of Commerce	Barry Gaines	43
	Herb George	43
1 September, Vancouver		
Project Management Institute	Chris Quaife	57
Road Builders Association	Dennis Hall	67
	Ivan Hanshard	68
Carpenters Union 41	Colin Snell	83
B.C. Government	John Shields	108
Employee's Union	Paul Martin	108
Union of Operating Engineers, Construction and General Workers Union, Tunnel and Rock Workers Union and International Brotherhood of Teamsters	Jim Lippert	126
	Don McGill	126
—	William J. Blakely	134
14 September, Victoria		
B.C. Construction Association	David Weller	141
—	Jim Ferguson	141
Ministry of Transportation and Highways	Roy Illing	171
Her Majesty's Opposition	Michael Harcourt	188
	Dan Miller	188
Western Integrated Electrical	Carl Slavin	199
19 October, Victoria		
Ministry of Transportation and Highways	Tom Johnson	221
	Al Rhodes	314
	Stewart Price	321
Ministry of Transportation and Highways	Ron Lyall	323
	Norm Zapf	412
	Len Johnson	422
	Ian Rokeby	422
20 October, Victoria		
Ministry of Transportation and Highways	Stu Price	426
	Norm Zapf	430
	Mick Elston	518
	Roy Illing	531
	Al Lemacher	571
Commission Advisor	David Hooper	573
Commission Advisor	Robert Tribe	613
Ministry of Transportation and Highways	Roy Illing	664

SPONSOR AFFILIATION	WITNESS	TRANSCRIPT PAGE No.
5 November, Victoria		
Ministry of Transportation and Highways	Al Rhodes	671
	Stu Price	678
	Tom Johnson	693
Treasury Board, Ministry of Finance	Sue Stephen	713, 730
	Tony Stark	734
	Doug Hyndman	742
	Frank Klassen	748
	Rick Krowchuk	759, 774
		775
Commission Advisor	David Hooper	768
Treasury Board Ministry of Finance	David Emerson	778
—	Hugh Curtis	791
—	Alex Fraser	826
—	Bud Smith	840

APPENDIX B-3

Listing of Exhibits at Commission Hearings

1 Summary of authorization and expenditures Coquihalla Highway dated Nov. 30, 1985.

2 Blue three-ring binder — 27 Tabs

- Estimates for 1985/86, Ministry of transportation and Highways Vote 74 Economic Renewal
- Public Accounts, Financial Statements 1985/86 Vote 74 Economic Renewal
- Estimates for 1986/87, Highway Operations Vote 74
- Summary of Authorizations & Expenditures — Coquihalla Highway — December 1985
- Summary of Authorizations & Expenditures — Coquihalla Highway — February 1986
- Coquihalla Projects — included December 1985 but not included February 1986, in financial summary
- Summary of Authorizations & Expenditures — July–December 1985, February-March 1986
- Coquihalla Highway — total costs tabulation
- Pre-approval of Contracts 1985/86, Treasury Board Request 1/86, Letter from Minister of Highways to Chairman Treasury Board — April 1, 1985
- Letter from Chairman of Treasury Board to Ministry of Transportation and Highways re: Contract pre-approval — May 10, 1985
- Supplementary Highway Capital Construction, Treasury Board Request 9/86, Letter from Minister of Highways to Chairman Treasury Board — September 23, 1985
- Special Warrants, Treasury Board Request 21/86, Letter from Minister of Highways to Chairman Treasury Board — December 9, 1985
- Transfer of Offsite Projects, Letter & attachment from Director of Financial Services to Ministry Officials — January 29, 1986
- Financial Administration Act — sections 18-21
- Coquihalla Highway Construction Acceleration Act (c. 69, SBC 1985)
- Great Bear Snow Shed — file documents
- Mine Creek — Juliet Construction — file documents
- Ladner Creek Bridge — file documents
- Ministry of Transportation and Highways Act — sections 49 & 50
- Ministry of Transportation and Highways Policy Manual — sections 18.08 & 18.09
- Supplementary Highway Captial Construction, — Treasury Board request 8/86, letter from Minister of Highways to Chairman Treasury Board — July 15, 1985
- Summary of 1985-1986 Special Warrant Project Authorizations — Highway Capital Construction — listing tabled in Legislature — March 26, 1986
- Public Accounts, Financial Statements 1985/86 — Vote 74 Economic Renewal
- Ministry of Transportation and Highways Annual Report — Summary of Capital and Maintenance Expenditures by Vote
- Ministry of Transportation and Highways Annual Report — Report of Director of Construction — breakdown of Coquihalla road construction projects
- Summary of Authorizations & Expenditures Fraser River Crossing — June 30, 1985 - March 31, 1986

3 Black Three-Ring Binder Extracts from Hansard and News Releases — 44 Tabs

- Jan. 13/77 — Throne Speech, Hansard p. 5
- Feb. 4/77 — Hon. Alex Fraser, reply to Throne Speech, Hansard p. 649
- Nov. 10/78 — Hon. Alex Fraser, News Release
- Dec. 6/78 — Hon. Alex Fraser, News Release
- Jan. 4/79 — Hon. Alex Fraser, News Release
- July 26/79 — Hon. Alex Fraser, Hansard, p. 1047
- Oct. 4/79 — Hon. Alex Fraser, News Release
- Mar. 17/80 — Hon. Alex Fraser, News Release
- June 12/80 — Hon. Alex Fraser, News Release

- May 21/81 — Hon. Alex Fraser, Hansard, p. 5691
- Nov. 23/81 — Throne Speech, Hansard, p. 6612
- Dec. 1/81 — Hon. Alex Fraser, Hansard, p. 6743
- June 5/82 — Hon. Alex Fraser, Hansard, p. 8453
- June 28/82 — Hon. Alex Fraser, Hansard, p. 8475
- June 29/83 — Hon. Alex Fraser, Hansard, p. 87
- Sept. 26/84 — Premier's Office, News Release
- Oct. 4/84 — Hon. Alex Fraser, News Release
- Nov. 8/84 — Hon. Alex Fraser, News Release
- Nov. 13/84 — Hon. Alex Fraser, News Release
- Nov. 30/84 — Hon. Alex Fraser, News Release
- Feb. 11/85 — Hon. Alex Fraser, Hansard, p. 4891
- Mar. 4/85 — Throne Speech, Hansard, p. 5119
- Mar. 12/85 — Press Release, Hansard, p. 5225
- Mar. 26/85 — Hon. Hugh Curtis, Hansard, p. 5466
- Apr. 1/85 — Hon. Alex Fraser, News Release
- May 9/85 — Hon. Alex Fraser, News Release
- May 28/85 — Hon. Alex Fraser, News Release
- June 5/85 — Hon. Alex Fraser, Hansard p. 6450
- June 5/85 — Hon. Alex Fraser, Hansard, p. 6455
- June 6/85 — Hon. Alex Fraser, Hansard p. 6480
- July 19/85 — Hon. Alex Fraser, News Release
- Nov. 20/85 — Hon. Alex Fraser, Hansard, pp. 7045-8
- Nov. 21/85 — Mr. Gableman/Hon. Alex Fraser, Hansard, pp. 7075-79
- Mar. 11/86 — Throne Speech, Hansard, pp. 7267-7272
- Mar. 18/86 — Mr. Lockstead, MLA, Hansard, pp. 7400-1
- Mar. 26/86 — Hon. Alex Fraser, Hansard, p. 7568
- Apr. 4/86 — Hon. Alex Fraser, News Release
- Apr. 29/86 — Mr. Lockstead, Mr. Fraser, Hansard, p. 8016
- May 7/86 — Hon. Alex Fraser, News Release
- May 16/86 — Hon. Alex Fraser, News Release
- May 22/86 — Hon. Alex Fraser, News Release
- May 29/87 — Hon. Alex Fraser, News Release
- June 4/87 — Hon. Alex Fraser, Hansard, p. 8557

4 Special Warrants, Treasury Board Request 21/86, Letter from Minister of Highways to Chairman Treasury Board — December 9, 1985

5 Financial Summary as at November 30, 1985 Prepared by Mr. Stu Price

6 Memorandum Dated May 3, 1977, showing tentative construction schedule Hope to Merritt

7 Tabulation of 15 contracts showing increase in amounts from original contract through to totals paid to contractor

8 Annotated listing — Economic Renewal — Special Highway Capital Construction Projects Vote, p. 6, showing amount expended 1986

9 Annotated listings of Highway Projects April 1, 1985, p. 7, showing amount expended 1986

10 Chart: Typical Project Management Organization — Large Project

11 Graph of Phase 1 Hope-Merritt Construction Projects

12 Special Warrants 1985/86, 9 pp. Briefing note Dated March 26, 1986

13 Blue Book, 3-Ring Binder with 17 tabs

14 Appendix "D" and Appendix "E", prepared by Mr. David Hooper, C.A., comparing project listings

APPENDIX B-4

Listing of Other Submissions to the Commission

Letter, August 24, 1987, re: Highway Construction Overruns from Mr. J. Mawle

Submission, August 28, 1987, re: Location of Larson Hill Underpass, from Bruce F. Beech, R.P.E.

Submission, October 19, 1987, re: The need for a comprehensive highway development planning process and for an advisory body on highway development, from W.J. Blakely, P. Eng.

Letter, October 26, 1987, re: Coquihalla and Related Projects dated September, 1987, from The Hafer Machine Co. Ltd.

APPENDIX C

Tri-Man Consulting Services Ltd.
General Delivery, Cochrane, Alberta T0L 0W0
(403)932-6989

December 9, 1987

Commissioner of Inquiry
Coquihalla and Related Highway Projects
202 - 333 Quebec Street
Victoria, British Columbia
V8V 1X4

Dear Sir:

Further to that agreement dated the 17th day of August, 1987 between:

> Her Majesty the Queen in Right of The Province of British Columbia As Represented By The Inquiry Commissioner, Douglas L. MacKay, appointed by Order in Council 1546/87
>
> and
>
> Tribe Management (Tri-Man) Consulting Services Ltd., having a place of business at P.O. Box 217, T0L 0W0 in the City of Cochrane, in the Province of Alberta

to provide the following services:

(a) review contract and other material relating to the Coquihalla and other recent highway projects;

(b) participate in interviews and field tours relating to these matters; and

(c) provide written and oral advice to the Commissioner in the areas of contract management, capital cost budgeting, project estimation and scheduling, and cost control systems.

In accordance with the above scope of services, we have conducted a review of the relevant documents, toured the site, interviewed participating consultants and Ministry staff and provided oral evidence to the Commissioner.

Our written report on our findings, conclusions and recommendations is attached.

Yours truly,

R.N. Tribe, P.Eng.

RNT/bb

Attachment

Commissioner of Inquiry
Coquihalla and Related Highway Projects

INTRODUCTION

The primary focus of our investigation and analysis was in the area of project management practices as they related to the Coquihalla project.

The investigation included a review of the relevant documents, two field trips and interviews with representatives of participating consultants and senior Ministry staff.

Although our investigation and analyses uncovered numerous examples of questionable practices, the report, because it is not an audit of practices, only draws sufficient example to properly illustrate specific points.

The findings are summarized in the principal areas of:

Budgets

Estimates

Schedules

Project Structure

Overruns

Organization

Fast Track Costs

BUDGETS

The Ministry only recognizes one budget, namely the annual expenditure limits set by government. There is no doubt, when limited funds are available on an annual basis, this type of budget control is critical.

In a working environment that encompasses capital expenditures on large projects, spanning more than one year, this restrictive approach to budgeting has several major shortfalls.

1) There is no incentive to track and account for a project for its entire life cycle.

2) There is no performance measurement or value for money criteria associated with this budgeting process.

3) Projects spanning multiple years represent long term commitments, which, because the total project cost is not properly assessed prior to commitment, represent an unknown demand on long term financial requirements.

With respect to the Ministry staying within budget, because, under this restrictive definition, they never exceed their annual spending limits, it becomes very academic whether they did or did not stay within budget.

Nevertheless, the back-up estimate for 1985/86 annual budget was examined. The examination indicated that for grading projects on the Coquihalla, the estimate for 1985/86 was $133 million. Records of actual expenditures, for the same projects, indicate that $166 million was expended. This amounted to an overrun of $33 million for these specific projects. The information provided did not identify where the additional funds necessary to cover this overrun came from, or indeed if the total work program was completed as originally set out for 1985/86. Although the Ministry claim to have stayed within their overall spending limits, and thus stayed within budget, this is more representative of bureaucratic gamesmanship than responsible budgetary control.

Estimates

From our investigation, it would appear that the Ministry prepares two types of estimates; namely, estimates for the evaluation and comparison of alternate routes, and the estimation of proposed contracts.

The estimates for proposed contracts are used for both bid evaluation and annual estimates. These estimates are straightforward and of little relevance to the issues under investigation. Accordingly, they are not the subject of any further consideration in this report.

The route study estimates, by the Ministry's own admission, are very incomplete and inaccurate. They are by nature always low as they only make provision for identifiable cost components plus a nominal contingency. For the intended purpose these inaccuracies are not critical as the results still provide a relative ranking of alternate routes and/or design standards.

Unfortunately, this is the only estimate that provides a complete appreciation, although hopelessly inaccurate, of the total project and when these estimates are used as a basis to approve, or announce, a new highway system, their quality and incompleteness become an issue.

For the Coquihalla, the contents and supporting documents for three such estimates were reviewed, namely the 1973 estimate, the 1978 estimate and an estimate prepared in 1979. Comments are as follows:

1) All three estimates only dealt with the highway proper and did not take into account other works necessary to make the highway a complete system. Associated costs such as land and engineering were not evaluated. In other words, even if the estimates were accurate they did not reflect the total financial requirements necessary to proceed with the project.

2) The estimates prepared in 1973 and 1978 were very incomplete, especially in the evaluation of most probable costs. The estimates did not take into proper consideration the quality of the information and the relative risks. The direct costs were, for the most part, derived using estimated quantities times unit rates. In order to establish the estimated actual cost an estimated allowance for the unknown, in the form of a contingency, was added to the direct costs. Unfortunately, it would appear the contingency estimate lacked any proper evaluation and failed to cover such a basic item as known historical growth of contracts. To be more specific, the historical growth on grading contracts, after award, is in the order of 35 percent, yet, for the Coquihalla route estimate, where information was less accurate than the information at the time an actual contract was prepared, a contingency of only 10 percent was used.

3) Because there was no formal basis of preparing and recording estimates, the comparison of the 1973 estimate with the 1978 estimate and the estimate prepared in 1979 lacked any document trail to indicate how the estimates were re-evaluated, and reconciled against one another. None of the estimates indicated how the $250 million was derived. In fact other than public information releases, there is no record of an estimate or any basis of rationale of an estimate accounting for the $250 million figure. The 1978 estimate was for $193.9 million with no documentation on how it was upgraded to $250 million. The 1979 estimate was for $210 million dollars with no indication of how it moved from $193.9 million, nor any reference to $250 million. A 1984 estimate did not exist.

4) There was no definitive scope statement associated with any of the estimates. Without a scope statement there was no relevant basis for comparison of actual costs to budget, i.e. comparison of the $250 million to actual costs was not meaningful as the actual costs were not for the same scope. To state it in simple concise terms, what was estimated was not what was built.

5) There is no evidence of any policy or procedure within the Ministry for the review and approval of scope change. On the Coquihalla, between 1978 and 1984, the highway was upgraded from a rural 4-lane divided highway to an expressway standard. In our opinion this had a significant impact on cost, yet, for this very significant change, there is no evidence of any evaluation process and corresponding approval.

For large projects, no basis of control or accountability can be established without significant improvements in the estimating process.

Schedules

There was no overall schedule for the project. From our investigation it would appear that the absence of a project schedule was common practice and was indicative of a total lack of any formal planning procedures within the Ministry.

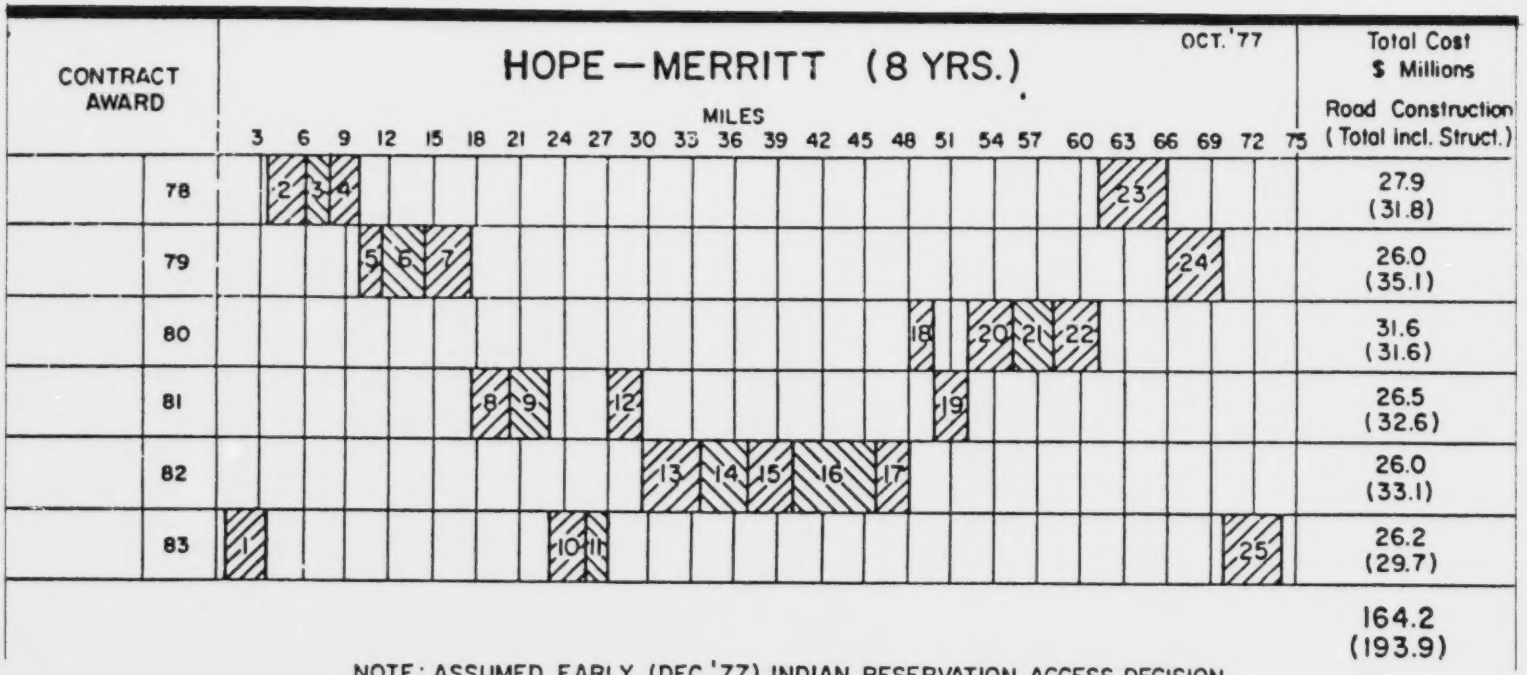
In interviews, Ministry staff did identify a schedule for the six or eight year program, announced in 1977. We call it a six or eight year program because the schedule shows a six year work program but the announcement and schedule title refer to eight years. The documentation supporting these statements consisted of an 8 1/2" x 11" bar chart (Figure 1). Upon examination, it would appear the document was not a schedule but a summary work program as back-up to a rough cash flow.

With the exception of the above referred document, which in our opinion was not a schedule, we could find no other evidence of any formal scheduling activity within the Ministry. The absence of a total project schedule, or any documented plan, meant from its outset that it was a project destined to be full of surprises.

In formulating an expectation of the scheduling requirements for this project, it is fully appreciated that scheduling for this type of work does not require complex, overly sophisticated scheduling techniques; however, there is no justification for the total absence of scheduling displayed by the Ministry.

The individual contractors did submit contract schedules and the schedules were monitored. In our opinion, this is not sufficient for a project like the Coquihalla which, because of its magnitude, should require a plan before any contracts are awarded. The schedule as a minimum should identify key interfaces and provide the basis against which the total project progress can be monitored, reported and contingency plans evaluated.

Another side issue, not of direct relevance to the project actually built, is the appropriateness of the capital projects planning philosophy as portrayed in the original work program announced for the Coquihalla in 1977. As controversial as the fast track used to actually build the highway, is the justification of a schedule that continues to invest money over a protracted period prior to realization of any user benefits. Our brief review of the project



NOTE: ASSUMED EARLY (DEC.'77) INDIAN RESERVATION ACCESS DECISION.

October 28, 1977

Figure 1

indicates that the optimum schedule would have been more in the order of a four year program consisting of one year engineering and a three season construction schedule. Although our analysis was by no means definitive, there are indications that better planning of capital projects could yield more cost effective programs than those having schedules based solely on annual expenditure limitations.

Project Structure

From discussions with Ministry staff and materials supplied by them, it would appear that their definition of a project is very restrictive, only accounting for direct and indirect costs associated with a single construction contract. Under this system the Ministry accounts for contract payments, EWO's, UPL's, Ministry supplied materials incorporated in the contractor's works and field supervision assigned to the project or contract. Since this account only starts upon the award of a contract, it does not track pre-tender costs such as land, design consultants, etc.

Furthermore and more important to this report, none of the Ministry systems automatically track a project entailing multiple contracts. Individual efforts were made on the Annacis Project. This was not a requirement within the Ministry.

Overruns

The Ministry, in their brief and subsequently in discussions, tried to explain away contract overruns as being a natural phenomenon of Unit Price Contracts.

This approach gives the impression that the Unit Price Contract is meant to grow whereas, by definition, a unit price contract is meant to adjust, within narrow limits, the plus and minus quantities, where at time of tendering the final quantity is unknown because of field conditions or because finalization of detailing was not available.

From this definition, it is clear that it is intended as a plus and minus adjustment, within narrow limits. This implies over a series of contracts, properly set up, the growth due to quantity variation should be zero.

A review of the contracts for Phase I of the Coquihalla indicates that:

a) For bridge contracts, with the exception of three contracts, the final costs were within an acceptable range of the bid price. The three exceptions had specific explanations and were a result of fast tracking.

b) The actual costs of paving contracts stayed very close to the bid value.

c) The grading contracts, with the exception of few contracts, display significant contract overruns.

A detailed analysis of the grading contracts indicated an average contract overrun of 72 percent, with the worst contract growing from $5,794,213 to $17,480,314 for a 205 percent overrun.

It is important to note that when overrun is referred to, it is the difference between what the contractor originally bid to perform the work described in the contract document and the actual cost for work of a somewhat greater scope.

It does not necessarily mean that more work was done than what would have been required to complete a facility for its intended use, nor does it imply that more money than was required was spent and most importantly it does not mean a project overran its budget.

The analysis of grading contracts indicates the contract overruns were broken down as follows:

Original Contract	$120,071,526
Quantity Variations	5,207,609
Unit Price Letters	64,175,306
EWO's	13,234,730

In contrast with the Ministry's brief, the above indicates the largest portion of contract cost overruns were not quantity variations but in fact negotiated work through UPL's and the award of Extra Work Orders.

Examination of a sampling of the grading contracts indicates that, although the contracts were bid as unit price contracts, the scope of the contracts was so incomplete that the document failed to function in its intended way.

If the contract overruns were only making up for incomplete scope in the original documents and the increase was only for work that had to be done anyway then, one might ask, what is wrong with this?

Firstly, it moves a very high percentage of the work out of the competitive bidding process into a negotiated basis. In this environment no matter how vigilant and effective negotiations are, historically, there is a distinct pricing disadvantage and thus a premium over prices obtained in the competitive bidding process.

Secondly, although there is no evidence of wrongdoing, it leaves the Ministry staff open to temptation in dealing with contractors.

An example of the exposure to cost premiums, when a contract changes significantly, can be readily seen from some examples taken from Contract C2813.

First, a little background.

The contract was bid at $5,794,426. The contractor was $1,979,550 lower than the second bid and, in our opinion, there were strong indications of unbalancing. Upon initiation of the project, because the anticipated materials were not available, a major change was required. The change required the substitution of rock fill for the originally anticipated overburden material.

The contract changed so completely that of the original 33 bid items only 5, accounting for $107,180, were within the plus or minus 20 percent range.

Although 28 items, according to Ministry policy and not the contract, were subject to renegotiation, it would appear renegotiation only took place when it was to the contractor's advantage.

Specific examples are as follows:

1) The contract originally called for $81,000 m^3 of rock excavation in the road cut. Because of the necessity to use rock fill, the rock requirement grew to 759,930 m^3. The additional rock was to be quarried. Because of increased quantity and the difference between quarried rock vs. rock cut, the expectation would be that a reduced unit price was due. In this instance the contractor under-bid this item significantly, $8.00/$m^3$ as compared to an average bid of $13.40/$m^3$. The contractor requested a price increase resulting in a renegotiated unit price of $11.65/$m^3$. This amounted to $8,853,188, representing approximately 150 percent of the original contract or approximately 50 percent of the revised contract, for which one must ask "what price would have been bid in a competitive environment?".

2) Bid item 5b, "Watering" had a bid quantity of 200 kL's - this work quantity increased to 49,477 kL's. In this instance the low bidder's unit was high compared to the average $10.00/kL vs. $7.47/kL. This unit was not renegotiated!

3) Bid item 8a, "Foundation Excavation Type A Solid Rock in Place" had a bid quantity 120 m^3, the work quantity increased to 5,397 m^3. As above the low bidder's unit was high $100.00/$m^3$ vs. an average of $40.00/$m^3$. This unit was not renegotiated!

4) Bid item 3C, "All Materials Excluding Type A or Organic Materials" had a bid quantity of 1,251,000 m^3, this quantity decreased to 277,836 m^3. The contractor under-bid this item with a unit price of $2.15/$m^3$ compared with an average of $3.76/$m^3$. With this large reduction in work quantity, was a fair credit provided?

There is no right or wrong answer to any of the above, but it does point out, very vividly, that there is potential for a significant difference in the cost that would have been realized in a competitive bid, versus prices negotiated after contract award. It also clearly illustrates that when a contract moves out of the narrow limits intended for unit pricing, there is not only exposure in new negotiated units but also in the bid units that, because of changed conditions, become inappropriate.

Obviously all overruns cannot be avoided, however, the level experienced on the above contract and the project as a whole is, by any standards, unacceptable.

Organization

The Ministry organization is highly departmentalized. Under the Ministry's normal practices for capital expenditures or with smaller projects, this does not present a significant problem. This is because the scope of a small project is usually limited such that one department performs the majority of the work and thus takes the lead role.

For the Coquihalla, the Ministry did make some organizational changes, however, these changes were minor and did not encompass the project as a whole and, with the exception of engineering, the changes were in fact changes within existing departments. Because the changes did not break departmental boundaries, they failed to address such fundamentals as the establishment of a single individual responsible for the entire project. As to the appropriateness of this organization, we believe it suffice to say that, from studies and publications on modern project management practices, there is unanimous agreement that departmentalized organizations are not effective in managing projects.

The following observations illustrate some of the problems this organizational structure created.

Firstly, there was a wide variance in management styles and abilities where, because of departmental structure, parallel positions existed that would have been more effectively handled by a single individual. For construction there was no single individual responsible. Bridge contracts were administered by the bridge department and grading contracts were administered by the construction department.

The bridge department had difficulty in dealing with some of the contract issues that arose as a result of fast tracking. In these instances they were perhaps less than effective in containing the cost. In contrast, the grading construction department seemed to thrive on the challenge and were prepared to take whatever steps were necessary to achieve the project, cost and process notwithstanding. These contrasting styles led to several inconsistencies that would, in our opinion, have been handled more effectively had a single, qualified, individual been responsible for all construction.

In reviewing construction overruns, in particular with Mr. Zaph, there were many references to the construction department utilizing "their geotechnical consultant" as to opinion on field changes. This was after the contract was awarded and to the best of our knowledge excluded the original designers. Had a project organization been established, on a true project team basis, for the total project life cycle, construction input would have been solicited at an early stage and many of these changes avoided.

The lack of any internal change control system compounded the problems of the departmental organization. There were many examples where major field changes were made, where because construction was in control, there was no input or

approval from the responsible design engineer or consultant. This lack of formal change control not only had the potential of adding unnecessary extra costs but deprived management of any ongoing assurance of technical compliance.

There were situations where adjacent contracts, because they were managed by different departments, decisions required to co-ordinate two adjacent contractors had to be processed through the respective departments in Victoria.

The impact of many of the above noted problems was partially masked because of the experience of a few key individuals within the Ministry. This will not always be the case.

Fast Track Costs

The decision to fast track was necessary if the project was to be completed in time for its intended use. Normal practice would have required an estimate of the anticipated added cost of fast tracking prior to making the commitment to proceed. We were unable to find any evidence of such an estimate. This situation is, in our opinion, unacceptable and tantamount to issuing a mandate to proceed at any cost.

The Ministry in their brief stated, after the fact, actual additional costs due to fast tracking were less than $15 million. In follow-up meetings the Ministry produced an accounting of $9+ million and eventually at the hearings they re-estimated the cost at $12+ million.

In our opinion, the Ministry have taken a narrow approach in their evaluation of the cost by only identifying specific line items of direct costs, which are not a fair estimation of the total cost of fast tracking.

By taking a much broader, but informed approach, there is a sound and defensible basis to estimate the actual cost of fast tracking. In our opinion the proper estimation is in the range of $30-50 million.

The rationale and make-up of this estimate is as follows:

a) There were three structures where a fair evaluation of the expected costs can be made if the structures had been built under normal conditions; the structures are Great Bear Snow Shed, Ladner Creek Bridge, and Ottimite Bridge. For these structures the difference between expected cost and actual cost is directly and indirectly due to conditions associated with fast tracking.

   The estimated value for this is $9.5 million.

b) Due to the constrained time frame, there were compromises to the ideal sequencing of work. This caused extra costs and/or prevented the mitigation of extra costs. Of particular note is the Dry Gultch Bridge. Dry Gultch formed a natural barrier and divided the project. The two contracts immediately to the south of the gultch had combined overruns in the order of $30 million. The primary cause of the overruns were materials availability. If access had been available across the bridge many of these extra costs could have been mitigated.

In our estimation, this would have saved $6-10 million dollars.

c) There is a premium paid on prices negotiated after the contract is awarded. On grading contracts alone, there were UPL's and extra work amounting to $77 million.

A large portion of this extra cost was due to the incompleteness of the contract documents which in part was due to the limited time available for engineering.

Making a 10 percent allowance for normal contract growth, this leaves $65 million in contract growth that can be classified as extraordinary.

Historically, it can be said that such costs attract a 20-40 percent premium. Given the Ministry's record in dealing with contractors it would be reasonable to assume they contained this premium at the lower end of the range. However, this still attracts a premium in the order of $15 million.

As evidenced on Contract C2813, when a contract moves from its stated scope, as defined by the narrow quantity variations, there is potential for additional costs not only in the renegotiated values but due to the inappropriateness of original bid items when applied to changed conditions. Accordingly, the $15 million estimate is considered to be conservative.

d) Certain functions are normally performed by the Ministry personnel and are budgeted as part of the annual budget. When these functions are performed with outside consultants, this represents an extra cost to the Ministry. Obviously this is not an absolute cost, but in the case of the budgeting methods of the Ministry it is an extra cost. Specifically on the Coquihalla the use of outside consultants represented an extra $8 million dollar cost.

e) The Ministry has identified specific items which should be included:

- Grading Construction	$3,452,000 x .80* =	$2,760,000.00
- Miscellaneous Structures (excludes Great Bear Snow Shed, Ottomite Bridge, Ladner Creek Bridge)	$ 500,000 x .80 =	400,000.00
		$3,160,000.00

* Adjustment to allow for item "C"

Summary

a)	Structures	$ 9.5
b)	Sequencing	8.0
c)	Negotiated Work Premium	15.0
d)	Outside Engineering	8.0
e)	Ministry Identified Cost	3.2
		$43.7 million

The above values represent the major cost components of fast tracking. Because they reflect actual costs and actual costs are affected by the organization and procedures in place, in our opinion, had a more appropriate organization been established with proper procedures, the cost of fast tracking could have been reduced significantly.

There are other costs which are far more intangible and thus not quantifiable or not entirely quantifiable without further investigation and analysis.

Examples of other costs are:

- Premium on Bid Work.
  Contractors bid to a schedule which, in order to be met, necessitated less than optimum use of equipment. In addition, there was a requirement for multiple shifts and extended overtime. These costs were built into the bids and are not considered in this analysis.

- Management.
  For construction supervision, the Ministry were able to staff the whole project with the exception of one contract. One must ask how significantly did this dilute the quality of management and what impact did this have on cost? Also did other Ministry work suffer as a result of this?

- Contract Documents.
  MOTH contracts are very one-sided and unworkable in their present form. In our opinion, because of the bidding environment that existed, this did not add costs. Items such as re-wording of bonding requirements most likely had an effect on cost.

  Without investigation it would be our opinion that the bond costs to the contractor would be higher and thus a higher cost to the project. Normal bonding costs are three quarters of one percent. If the bonding cost went up by a quarter of one percent, the added cost would be $750,000±.

Conclusions

The MOTH is set up organizationally and procedurally to administer an annual expenditure program.

This environment lacks the organization structure, procedures and general incentive to manage, control, report and account for a large project spanning several years.

The situation led to abuses in reporting and general accountability as well as additional costs inherent with the inappropriateness of the general management practices applied.

The government, as the MOTH's owner, made no specific demands on the MOTH other than those necessary to satisfy the annual budgetary process.

RECOMMENDATIONS

1) Project Initiation

For new capital projects of financial significance, prior to approval, the government must demand a more disciplined evaluation process based on more complete and comprehensive information. The process must take the following into consideration:

a) Approval of large projects should receive special attention outside the annual budgeting process.

b) The quality of the estimate must reflect the most probable cost including all associated works required to make the project complete for its final intended use.

c) The estimate must be subject to scrutiny and be able to stand on its own including a definitive scope statement.

d) Funding must be reserved on a project basis. The requirement for additional funds must be subject to formal review and approval.

e) The documents submitted for approval must include a total project schedule that clearly displays evidence of proper planning and sufficient detail that schedule progress can be monitored and reported against.

In the event that a project is to be announced at a very conceptual level, budgets must be limited to interim values sufficient to firm up design to the level of providing a proper estimate. There must be provision for re-affirmation or approval before commitment to the capital portion of the project can be made. The Ministry of Finance as the government's representative must have the expertise available to assess applications for reasonableness and completeness.

2) Organization

If future large projects are to be performed within the MOTH, the organization must be set up so as to accommodate a project team approach for the total project life cycle. This starts with the ability to vest all responsibility in a single project manager. In addition, the supporting organization must be assigned to the project on a full-time basis and report up through to the project manager. Since these projects represent the single highest variable component within Ministry's budget, the project manager must report to a senior level within the Ministry.

During our investigation there did not appear to be evidence of any senior managers possessing strong project management skills. Because of this, consideration should be given to the rectruitment of a project manager possessing the requisite experience and skills. The emphasis must be on the project management skills necessary to manage a large capital expenditures program. This should not be confused with construction and/or construction management.

Policies and procedures must provide for authorization limits and authorities that allow the project manager to operate effectively.

3) Project Control and Reporting

A Project Control group must exist either in the project or as an independent group within the Ministry. The group must report to a senior management level. Unlike an audit function, the primary purpose of the group shall be to forecast the position of a project such that corrective actions can be taken. This group would also be responsible for ensuring the project reports and conducts its affairs within the approved policies and procedures.

Strong consideration should be given to the establishment of a central estimating section within this group.

To complement this group, a comprehensive computerized project management system should be sought out and implemented.

4) Scope

As discussed in the first recommendation, the request of additional funds should require a formal approval; similarly safeguards must be in place to ensure surplus funds resulting from underruns should not be expended on unauthorized scope. The management of scope is of equal importance to the management of funds. Scope here relates to the functioned scope of the project and encompasses such areas as design standards, end use functionality, capacity, etc.

5) Contract Documents

The body of the report discusses the incompleteness of the contracts and the resultant overruns. The report does not discuss the appropriateness of the documents. A review of the contract document reveals that it is a totally inappropriate document, in fact in our opinion so inappropriate so as to be unenforceable. As a result, the Ministry supervisory staff and management are forced to take on a godlike role in order to make the document workable. The document in its present form cannot be administered in a universal manner.

Although there are no costs directly attributable to the inappropriateness of the document, in our opinion, in a more buoyant economy, bidders may in fact view and price these documents quite differently.

The documents must be re-written in their entirety. There is not an abundance of good standard documents available for use where the supervising engineer is an employee of the owner. The only ones that we are aware of are the ones developed for the SkyTrain Project.

This final recommendation should also include a review of the bid item breakdown. In many instances, when adjustment due to changed conditions was required, the bid item unit price became inappropriate.

APPENDIX D

Province of British Columbia

Douglas L. MacKay, P.Eng.
COMMISSIONER

Commissioner Inquiry Into
Coquihalla and Related
Highway Projects

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October 16, 1987

Mr. Douglas L. MacKay, P.Eng.
Commissioner
Commissioner Inquiry Into
Coquihalla and Related
Highway Projects

Dear Mr. MacKay:

Re: Coquihalla Commission Inquiry

As Research Engineer, I was employed to assist in:

1) defining the boundaries of the Coquihalla Highway, its sections and the various related works;

2) reviewing and tabulating construction costs, on contracts for the Coquihalla project;

3) preparing statistical and other information, on other Ministry contracts; and

4) reporting on the work specified in 1-3 above.

The first task was to gather plans, maps and contract documents from the Ministry of Transportation and Highways in order to identify the various works under consideration.

Following this, a definition of the physical boundaries of the Coquihalla Highway, its sections and the other work was determined. In doing this, Ministry Annual Reports were reviewed and various Ministry staff consulted. Some anomalies were found in the descriptions in the Annual Report, but this matter was to be pursued by others. Working definitions of the Coquihalla Highway, the Ancillary Works and the Trans Canada Highway Upgrade, were agreed with Ministry staff as follows:

COQUIHALLA HIGHWAY: - Hope to Merritt
Nicolum Creek Bridge to Nicola Interchange inclusive

- Merritt to Kamloops
Nicola Interchange to and including Copperhead Drive Underpass on Highway 1

- Okanagan Connector
Merritt to the Okanagan, Nicola Interchange to Peachland

ANCILLARY WORKS: Highway 3
Hope to Nicolum Creek
Alexander Creek Bridge

Highway 5
Realignment at Long Lake Road
Paving Nicola to Peter Hope Road
Paving Merritt District Boundary to Highway 1

Highway 8
Three Mile Bridge and Approaches
Curnow Bridge and Approaches
Rattlesnake Bridge

Meadow Creek Road Improvements
Highland Valley Road Improvements
Various Rights of Way and Property Purchases

TRANS-CANADA HIGHWAY UPGRADE WORKS:
Vicinity of Hope
Floods Underpass
Silver Hope Underpass
Tom Berry Road Bridge
Hope Overpass
Thacker Overpass
Silver Hope Creek Bridge
Floods to Hope Highway Construction
Watcom Interchange
Popkum Interchange

Wahlach to Cheam View Road Construction
Cheam View to Jones Creek Road Construction
Hunter Creek Interchange

Vicinity of Kamloops
Aberdeen Interchange
Old Ski Hill to Columbia Street Construction
Various Property Purchases and Electrical Work for Lighting

The second task was to gather, tabulate and analyze data regarding the Ministry's contracts for the Coquihalla project.

To accomplish this, all of the Coquihalla Highway - Hope to Merritt grade construction contracts, bridge contracts and paving contracts were examined. For each contract the final sums paid to the contractors were broken down as to the following amounts:

- paid for quantities at bid unit prices,
- paid for quantities at negotiated unit prices
- i.e. under Unit Price Letters,
- paid to the contractors on Orders for Extra Work
- i.e. actual cost plus 20%,
- paid as "other," the major item here being adjustments for Federal Sales Tax.

To obtain this information it was necessary to recalculate the final estimate for each contract isolating the amount paid under Unit Price Letters. The Ministry's monthly progress estimates and final estimates include the amounts paid for the bid unit prices and the amounts paid and the quantities for the various Unit Price Letters but they are not totalled separately. Extra Work Orders are handled separately and in effect are paid on invoice. The extra work amounts were provided from the Ministry Financial Services Branch datafile.

Centrally recorded information supplied by the Ministry was received in various stages of completion and was inconsistent with respect to format and content and many anomalies had to be reconciled.

From the work described above it was possible to develop a computerized datafile which was called Datafile A - Coquihalla Phase 1 Contracts. This datafile consists of 23 grade construction, 18 bridge construction and 5 paving contracts. It includes the Unit Price Letter information, the quantity adjustments for each contract, that is, the amount paid at the bid unit prices along with the extra work order payments, and this datafile is attached entitled Schedule 1 - Datafile A.

This datafile was recorded on computer (an IBM P.C. compatible) using Lotus 1-2-3 software. From the datafile various statistics and graphs were derived for use by the Commission staff.

For the third task, 283 Ministry contracts over $1 million since 1980 were examined as follows:

- 139 grade construction contracts,
- 52 bridge construction contracts, and
- 82 paving contracts,

for a total value of work of approximately $1.16 billion. Most of the information was derived from a report from the Ministry's Financial Services Branch called Listing of Project Contract File. In this file are contracts since 1980 and earlier, some listed without completion dates. This datafile does not necessarily contain the latest information and it should be noted that the "contract expended to date" figure in this datafile does not always coincide with the equivalent information supplied in the final progress estimate.

Accordingly, a substantial amount of work was done with the Ministry's Financial Services staff in order to ensure that the information was reliable and could be organized into meaningful categories. From the information and from final progress estimates for some of the contracts, 3 further datafiles were developed as follows:

- Datafile B - All contracts over $1 million since 1980; 283 in number.

- Datafile C - "Normal" contracts over $1 million since 1980, formed by removing contracts for the Coquihalla and Annacis projects from Datafile A. This left 31 grade construction, 22 bridge and 39 paving contracts for a total of 93 contracts.

- Datafile D - is made up of 18 randomly selected grading contracts over $1 million from Datafile C.

  Datafile D was developed because of the great difficulty in obtaining all of the Unit Price Letter and Extra Work Order information from completed contracts in past years. Accordingly, with assistance of the Financial Services Branch, a smaller group of contracts was researched to produce a datafile containing Unit Price Letter and Extra Work Order information. This smaller group was used because of the large amount of work required to get this information. The contracts were randomly selected and are representative of all of the normal contract work since 1980.

The datafile information is tabulated and attached hereto as Schedule 2, 3, and 4 entitled respectively Datafile B, Datafile C, and Database D. Also attached is a description of the column headings on the datafiles indicating the variables available for analysis.

All of the above information was then entered on the computer. Various analyses were performed and graphs produced for use by the Commission staff.

Yours sincerely,

Tim Stinson

Tim P. Stinson, P. Eng.

COLUMN HEADING DESCRIPTION

PROJNO	Project Number: C construction; B bridge; S paving or surfacing
TENPRI	Tender price of selected contractor
QTY ADJ	Quantity adjustment. The net increase or decrease in quantities on BID ITEMS
UPLPD	Amount paid on Unit Price Letters
EWOPD	Amount paid on Extra Work Order
TOTPD-FEST	Total paid on final progress estimate
TOTPD	Total paid on the project to the contractor
TOTAL EXP	Total expenditure on project. This includes overhead costs on engineering, contingency and material procurement.
MOTH-EST	Ministry of Transportation and Highways estimate of contract based on estimated quantities.
OTHPD	Other paid. (An adjustment in Federal sales tax is the major item)
EW	Number of extra work orders issued
EWOAU	Estimated cost of the extra work orders
VAR	The % change from TENPRI to TOTPD

Datafile A

Coquihalla Hope-Merritt Contracts

PROJNO	TENPRI	QTYADJ	UPLPD	EWOPD	TOTPD	TOTALEXP
C0579	5,333,303	112,684	105,068	0	5,551,055	6,663,830
C0760	5,555,614	2,825,355	2,132,924	989,641	11,503,533	15,045,378
C2663	5,886,319	987,668	1,988,063	331,588	9,193,638	13,479,410
C2683	5,163,583	2,202,586	3,741,450	1,012,031	12,119,650	14,902,589
C2694	3,168,430	2,992,981	1,724,552	3,972,265	11,858,228	13,010,555
C2810	3,879,870	(99,479)	919,552	606,674	5,306,617	8,512,162
C2811	5,511,200	(1,813,903)	6,499,072	320,950	10,517,319	12,632,221
C2812	6,227,883	6,558,886	4,353,493	609,868	17,750,130	21,397,161
C2813	5,794,213	(1,049,565)	11,996,817	738,849	17,480,314	19,217,231
C2831	5,444,920	71,262	969,112	73,350	6,558,644	7,819,821
C2834	8,395,834	(749,984)	630,979	1,146,632	9,423,460	11,929,342
C2837	1,926,583	(401,130)	852,133	13,438	2,391,024	3,268,192
C2838	6,012,580	(638,273)	1,191,143	111,035	6,676,485	10,763,098
C2839	5,586,050	(431,619)	1,819,697	33,449	7,007,577	8,600,017
C2840	4,961,240	(321,243)	442,190	21,461	5,103,648	6,036,044
c2841	2,347,486	454,730	873,988	49,990	3,726,193	4,644,955
C2843	2,183,142	(53,400)	895,659	51,714	3,077,115	3,637,922
C2844	1,820,553	(584,830)	1,032,195	48,918	2,316,837	3,435,481
C2852	8,839,417	3,417,045	2,304,253	560,113	15,120,828	18,361,236
C2853	9,267,704	(1,241,186)	4,897,863	818,148	13,742,529	15,756,761
c2854	6,026,940	(1,827,083)	8,076,834.63	1,409,260	13,685,952	17,532,190
C3760	4,279,333	38,430	664,772.12	246,956	5,229,492	6,608,992
C4478	6,459,329	(5,242,262)	6,063,496	68,400	7,348,964	8,200,792
	$120,071,526	$5,207,669	$64,175,306	$13,234,730	$202,689,231	$251,455,380

PROJNO	TENDER	Qty adj	U.P.L.	E.W.O.	CONTRACT	Total exp
B-2789	5190930.00	-37003.00	84878.00	59120.24	5297925.24	5773553.00
B-2797	1650802.38	40429.62	46285.00	119566.24	1857083.24	2049371.00
B-2818	7611778.00	-3921777.00	5104401.00	567187.45	9361589.45	10389267.00
B-2826	423360.23	-16931.23	0.00	20305.22	426734.22	527099.00
B-2829	1888220.00	-25022.00	10800.00	6000.05	1879998.05	2025792.00
B-2830	1994844.12	-12922.12	209980.00	58615.50	2250517.50	2521037.00
B-2833	558336.76	-129491.76	113967.00	5253.30	548065.30	640638.00
B-2876	2405840.00	2301945.00	4990835.00	135143.89	9833763.89	10344884.00
B-2879	3166295.72	-38650.72	19160.00	30795.60	3177600.60	3589162.00
B-2881	1373851.00	-61256.00	17880.00	78025.37	1408500.37	1692868.00
B-2882	5524627.67	-3089332.67	5500994.00	2565400.33	10501689.33	15170193.00
B-2884	1823655.00	-3461.00	8995.00	35400.33	1864589.33	2178939.00
B-2885	2309038.00	72396.00	242954.00	71941.07	2696329.07	2918946.00
B-2886	1613703.55	-44831.55	31158.00	14029.07	1614059.07	1742411.00
B-2937	1528980.30	-1528975.30	2655656.00	388147.07	3043808.07	3428767.00
B-2939	3899139.73	102371.27	0.00	54629.53	4056140.53	4305466.00
B-3342	348018.54	6252.46	33068.00	24920.81	412259.81	462276.00
Tot B	43311421.00	-6386260.00	19071011.00	4234481.07	60230653.07	69760669.00

S-2965	1259123.00	57109.00	82674.00	294901.27	1693807.27	4112583.00
S-2966	1429355.70	-1429352.70	2697870.00	-1126048.42	1571824.58	3782710.00
S-2967	1876135.00	-465995.00	29901.00	1509417.39	2949458.39	7095193.00
S-2968	1857539.00	116477.00	250471.00	398240.11	2622727.11	6034000.00
S-2969	1121485.00	78484.00	19124.00	97309.17	1316402.17	3689345.00
Tot S	7543637.70	-1643277.70	3080040.00	1173819.52	10154219.52	24713831.00

Datafile B - Ministry

Contracts 1980-1987 over $1 million

PROJNO	AWRDATE	TENPRI	EWOPD	OTHPD	TOTPD-FEST	TOTPD
B-0557	80/11/06	2,014,220	69,727	0	2,156,152	2,225,879
B-1374	81/03/20	4,879,258	87,814	10,470	4,912,372	5,010,656
B-0692	82/09/13	2,755,904	1,949,302	783,000	3,165,576	5,897,878
B-1102	82/07/02	2,972,320	46,241	0	3,661,635	3,707,876
B-1079	82/01/15	2,992,777	43,614	0	2,675,885	2,719,499
B-1400	82/09/13	3,167,472	11,673	0	3,164,672	3,176,344
B-1332	83/04/07	971,825	22,347	0	1,025,355	1,047,702
B-1307	83/02/07	1,125,529	87,775	0	1,125,028	1,212,803
B-1736	83/06/07	1,132,735	60,173	0	1,227,929	1,288,102
B-1716	83/10/25	1,206,293	6,231	0	1,177,377	1,183,608
B-2300	83/07/25	1,245,275	60,370	0	1,274,481	1,334,852
B-1733	83/04/12	1,447,893	6,158	0	1,474,238	1,480,396
B-1306	83/02/07	1,657,651	63,060	0	1,646,058	1,709,118
B-1381	83/04/19	1,669,695	5,050	0	1,731,240	1,736,290
B-0551	83/03/24	1,716,202	19,216	0	1,703,264	1,722,479
B-2347	83/12/07	2,435,656	416,816	0	2,525,628	2,942,444
B-1102	83/05/09	2,688,997	30,492	0	2,766,094	2,796,586
B-2347	83/09/26	3,083,686	453,599	0	3,246,399	3,699,998
B-1677	83/04/08	5,548,601	65,324	0	5,602,723	5,668,047
B-2818	84/10/04	827,749	273,937	8,000	1,172,743	1,454,680
B-1420	84/05/30	1,026,687	10,455	0	987,123	997,578
B-2428	84/02/29	1,072,479	5,608	0	1,097,198	1,102,805
B-2881	84/11/15	1,353,850	78,025	0	1,332,820	1,410,845
B-2646	84/10/16	1,508,949	15,601	0	1,651,551	1,667,152
B-2886	84/12/20	1,613,704	14,029	0	1,600,030	1,614,059
B-2797	84/12/17	1,650,802	119,566	0	1,742,576	1,862,142
B-2787	84/11/08	1,900,905	43,373	0	2,085,044	2,128,417
B-2876	84/11/30	2,405,840	135,143	0	9,698,621	9,833,764
B-2690	84/11/28	2,572,544	195,949	5,350	1,851,379	2,052,678
B-2455	84/06/06	5,831,579	67,400	0	5,967,058	6,034,458
B-2818	84/11/06	6,784,029	194,700	0	7,613,915	7,808,614
B-0894	84/04/16	9,842,000	506,781	117,019	10,152,561	10,776,362
B-2637	84/07/23	11,612,651	102,847	0	11,422,942	11,525,790
B-2636	84/11/23	16,991,793	255,577	98,769	17,265,537	17,619,883
B-0895	84/03/01	45,754,806	1,247,068	904,387	51,669,751	53,821,206
B-2799	85/01/02	1,039,000	6,009	0	1,094,435	1,100,444
B-2899	85/04/11	1,359,298	23,669	0	1,358,871	1,382,540
B-3102	85/07/25	1,412,730	39,744	0	1,450,832	1,490,575
B-2929	85/02/12	1,491,948	18,186	0	1,471,714	1,489,899
B-2937	85/09/06	1,528,980	388,147	275,002	2,655,662	3,318,810

B-2387	85/05/22	1,598,837	21,555	0	1,595,053	1,616,608
B-2884	85/01/30	1,823,655	35,400	0	1,830,051	1,865,451
B-2829	85/02/18	1,888,220	5,907	0	1,873,998	1,879,905
B-2830	85/03/07	1,994,844	53,615	0	2,191,902	2,245,518
B-2880	85/01/30	2,082,052	21,703	0	2,106,682	2,128,385
B-3034	85/06/13	2,292,785	14,089	0	2,077,013	2,091,102
B-2885	85/03/12	2,309,058	71,940	0	2,624,389	2,696,329
B-2828	85/01/17	2,524,431	86,755	0	2,582,071	2,668,826
B-2924	85/01/30	2,566,730	15,920	0	2,531,188	2,547,108
B-2796	85/05/23	2,985,788	6,654	0	2,860,972	2,867,626
B-2879	85/02/27	3,166,296	30,336	0	3,147,265	3,177,601
B-2939	85/01/17	3,899,140	53,711	0	4,002,429	4,056,141
B-2789	85/01/30	5,190,930	206,631	0	5,238,806	5,445,437
B-2882	85/06/21	5,524,673	2,565,430	1,844,353	7,936,289	12,346,073
B-2832	85/03/07	5,577,861	275,968	0	5,472,195	5,748,163
B-2302	85/09/25	6,165,028	54,535	0	6,435,597	6,490,131
B-2599	85/03/26	10,584,088	411,859	0	12,788,221	13,200,080
B-3255	85/12/03	16,350,145	13,096	0	15,380,141	15,393,237
B-3724	86/06/23	1,086,066	8,448	0	1,062,823	1,071,270
B-3957	86/08/26	1,416,191	0	0	1,465,306	1,465,306
B-4148	87/04/06	1,399,860	9,442	0	1,322,428	1,331,871
B-4271	87/06/18	1,618,007	0	0	604,555	604,555
C-3958	80/03/21	1,633,178	0	0	317,254	317,254
C-3943	80/04/01	1,861,148	0	0	310,700	310,700
C-3962	80/08/03	2,804,958	32,478	0	3,948,349	3,980,826
C-2792	80/09/19	3,735,381	0	0	87,713	87,713
C-2901	80/01/02	4,669,715	282,256	168,935	8,753,972	9,205,163
C-4478	80/06/03	6,459,329	0	0	207,160	207,160
C-4477	80/01/25	9,982,237	245,045	150,450	12,300,486	12,695,981
C-0748	81/07/23	11,676,278	328,973	16,500	16,439,566	16,785,039
C-0747	82/04/20	1,590,749	43,099	0	1,748,780	1,791,879
C-1121	82/03/25	1,916,914	220,474	161,327	3,299,474	3,681,275
C-1312	82/09/13	2,366,880	79,275	29,858	2,841,718	2,950,852
C-1138	82/05/07	2,742,593	18,711	0	3,250,167	3,268,878
C-0746	82/03/11	3,783,316	109,135	0	2,685,382	2,794,517
C-1841	83/09/01	718,851	0	0	1,286,570	1,286,570
C-1744	83/04/13	959,571	132,535	32,774	1,658,793	1,824,103
C-2329	83/11/17	1,321,730	30,974	0	1,550,809	1,581,784
C-0982	83/04/12	1,429,469	25,929	0	1,581,463	1,607,391
C-1725	83/04/11	1,635,608	144,411	59,200	2,784,797	2,988,408
C-1710	83/04/13	2,091,503	105,823	0	2,554,789	2,660,612
C-1690	83/03/21	3,011,352	32,267	0	3,629,673	3,661,940
C-1711	83/04/11	3,576,448	81,307	35,100	4,905,910	5,022,317
C-1593	83/10/19	4,289,600	36,367	0	4,207,635	4,244,002
C-0579	83/05/04	5,333,303	0	0	5,551,055	5,551,055
C-1743	83/04/13	6,463,920	89,747	0	8,308,701	8,398,448
C-0916	83/03/29	7,058,912	1,822	0	7,213,852	7,215,674
C-1684	83/06/21	7,155,348	308,200	111,563	9,723,810	10,143,573
C-0282	83/04/13	7,779,770	73,468	73,448	10,607,002	10,753,918
C-1723	83/04/11	8,855,071	88,665	0	9,261,222	9,349,886
C-2827	84/09/11	435,572	11,816	0	1,199,769	1,211,585
C-2816	84/08/18	643,359	0	0	1,282,204	1,282,204
C-2416	84/01/06	1,095,000	9,388	0	1,272,460	1,281,848
C-2680	84/07/31	1,111,000	0	0	1,257,492	1,257,492

C-2620	84/08/23	1,137,462	45,431	0	2,512,974	2,558,405
C-2786	84/10/25	1,217,546	30,810	0	1,621,699	1,652,509
C-2656	84/06/20	1,367,125	156,253	90,622	3,381,245	3,628,120
C-2817	84/10/25	1,379,755	122,388	0	1,540,668	1,663,055
C-2782	84/08/28	1,528,180	33,488	0	3,694,338	3,727,825
C-2410	84/03/29	1,629,000	39,443	0	1,709,423	1,748,866
C-2844	84/11/23	1,820,553	50,329	13,069	2,251,738	2,315,135
C-2380	84/05/10	1,821,935	240,670	135,130	2,831,253	3,207,054
C-1584	84/12/27	1,854,800	0	0	1,910,898	1,910,898
C-2837	84/12/11	1,926,584	13,438	0	2,377,586	2,391,023
C-2843	84/12/18	2,183,142	51,713	4,912	2,975,079	3,031,703
C-2841	84/11/06	2,347,487	49,990	0	3,637,338	3,687,328
C-2594	84/06/11	2,358,082	42,590	0	2,806,558	2,849,147
C-2431	84/03/21	2,719,801	95,826	48,509	2,949,415	3,093,750
C-2694	84/07/11	3,168,430	3,972,266	864,000	7,844,068	12,680,333
C-2810	84/10/05	3,879,870	606,674	263,102	4,699,943	5,569,719
C-2679	84/08/14	4,969,727	15,540	0	6,131,418	6,146,959
C-2689	84/10/05	5,054,180	275,008	0	6,119,702	6,394,710
C-2683	84/08/07	5,163,583	1,012,031	789,089	11,107,619	12,908,739
C-2831	84/12/13	5,444,920	70,204	0	6,485,294	6,555,498
C-2811	84/09/21	5,511,200	320,951	0	10,196,369	10,517,320
C-0760	84/06/14	5,555,614	989,641	733,529	10,513,892	12,237,062
C-2593	84/06/11	5,594,809	724,415	282,115	7,595,130	8,601,660
C-2813	84/09/04	5,794,427	738,849	269,003	16,741,465	17,749,317
C-2663	84/07/17	5,886,319	331,588	232,200	8,862	572,650
C-2812	84/10/10	6,227,883	609,868	154,900	17,140 262	17,905,031
C-2907	84/12/27	6,878,973	516,969	167,027	8,946,232	9,630,228
C-2662	84/07/09	9,879,847	455,073	99,961	13,475,603	14,030,637
C-3262	85/09/24	688,173	63,749	0	1,145,121	1,208,870
C-2877	85/02/27	974,673	13,949	0	1,974,096	1,988,045
C-2986	85/08/07	1,033,830	96,180	0	1,537,728	1,633,909
C-3090	85/10/30	1,043,490	58,481	0	1,184,953	1,243,435
C-3076	85/10/30	1,123,795	12,043	0	1,302,537	1,314,580
C-3338	85/07/30	1,140,000	1,551,419	1,276,989	1,154,940	3,983,348
C-3071	85/10/16	1,150,407	13,890	0	1,789,168	1,803,058
C-3060	8505/13	1,248,648	89,564	0	1,489,700	1,579,264
C-3003	85/08/21	1,795,609	104,780	51,140	1,921,707	2,077,627
C-3026	85/05/13	1,894,547	56,287	0	1,892,244	1,948,530
C-2964	85/09/24	1,975,367	275,957	71,500	2,949,678	3,297,135
C-3409	85/11/26	2,111,574	172,648	58,200	2,723,695	2,954,543
C-2874	85/02/08	2,579,354	247,908	130,824	5,772,681	6,151,414
C-3432	85/11/07	2,592,044	124,360	34,269	3,711,325	3,869,955
C-3561	85/12/17	2,868,484	35,221	0	3,095,603	3,130,824
C-3429	85/11/19	2,952,390	85,043	0	2,070,926	2,155,968
C-3027	85/09/24	3,124,396	445,449	105,000	5,281,686	5,832,135
C-3394	85/12/23	3,158,629	166,098	40,300	3,891,495	4,097,893
C-3428	85/11/19	3,361,311	50,657	0	3,347,797	3,398,453
C-3358	85/12/17	3,652,540	221,242	214,000	5,606,432	6,041,674
C-3393	85/11/26	3,917,896	299,191	3,210	5,553,726	5,856,127
C-2891	85/01/29	4,250,599	30,726	0	4,353,732	4,384,457
C-2931	85/08/01	4,780,399	239,572	98,224	5,956,073	6,293,869
C-3416	85/12/17	4,957,268	25,946	0	7,155,896	7,181,842
C-2840	85/01/16	4,961,241	21,462	0	5,082,187	5,103,648
C-3357	85/12/05	5,046,424	228,304	22,200	11,353,154	11,603,658

C-3355	85/12/03	5,062,720	145,683	0	6,745,656	6,891,338
C-3036	85/08/06	5,503,335	202,835	38,400	6,671,797	6,913,032
C-2839	85/01/07	5,585,051	33,449	0	6,974,128	7,007,577
C-2838	85/01/22	6,012,580	111,036	0	6,565,450	6,676,486
C-2854	85/01/17	6,026,940	1,409,260	894,000	12,380,717	14,683,977
C-3356	85/12/03	6,595,854	494,767	190,000	7,258,104	7,942,871
C-2906	85/01/29	6,676,135	111,607	53,095	12,552,748	12,717,449
C-2819	85/01/04	7,348,980	666,379	341,075	7,684,899	8,692,352
C-3354	85/11/13	8,062,062	75,029	9,300	8,257,727	8,342,056
C-2834	85/01/22	8,395,835	1,146,632	845,603	8,276,828	10,269,063
C-2852	85/05/08	8,839,418	560,113	50,000	14,560,715	15,170,828
C-2853	85/01/15	9,267,704	818,148	620,355	12,924,381	14,362,885
C-2871	85/02/18	15,148,293	781,021	364,860	25,151,318	26,297,199
C-4059	86/08/28	3,118	3,118	0	1,905,662	1,908,780
C-3238	86/07/18	888,793	0	0	1,487,672	1,487,672
C-3600	86/03/12	1,525,317	22,786	0	2,502,242	2,525,028
C-3567	86/08/27	1,667,550	102,899	0	2,852,506	2,955,405
C-3562	86/01/16	1,956,610	4,073	0	1,723,325	1,727,398
C-3016	86/01/28	2,045,236	30,571	0	2,839,109	2,869,680
C-3563	86/06/04	2,099,115	115,348	0	2,962,622	3,077,970
C-3577	86/05/13	2,239,916	56,449	4,000	2,948,693	3,009,142
C-4058	86/07/30	2,524,377	115,241	0	2,428,737	2,543,978
C-3723	86/08/13	2,633,220	46,629	0	3,167,495	3,214,124
C-3638	86/11/05	2,677,135	4,444	0	3,080,438	3,084,882
C-3089	86/01/22	3,234,284	175,713	22,000	4,341,491	4,539,204
C-3558	86/01/15	3,470,013	48,915	0	5,255,122	5,304,037
C-2872	86/01/02	3,561,515	16,856	0	34,699,786	34,716,642
C-3628	86/08/26	3,577,777	15,561	0	2,982,349	2,997,910
C-3417	86/01/06	4,388,378	0	0	6,136,188	6,136,188
C-3619	86/02/25	4,441,911	171,359	16,422	5,514,449	5,702,230
C-3582	86/06/16	4,617,273	37,469	0	5,038,874	5,076,343
C-2873	86/01/02	4,775,550	57,995	0	4,728,995	4,786,991
C-3736	86/05/27	4,901,141	75,251	0	6,248,562	6,323,812
C-3753	86/05/13	5,650,549	428,543	0	4,656,242	5,084,785
C-3065	86/02/11	5,830,473	0	0	1,503,000	1,503,000
C-3581	86/05/27	7,060,937	102,865	0	7,976,124	8,078,989
C-3559	86/03/13	7,133,515	32,656	0	8,687,359	8,720,015
C-3427	86/09/15	7,282,995	30,500	0	3,975,937	4,006,437
C-3906	86/07/29	9,131,893	252,973	15,000	8,164,598	8,432,571
C-3426	86/11/26	9,223,571	0	0	2,680,765	2,680,765
C-4225	87/05/19	1,141,303	0	0	0	0
C-4259	87/04/14	1,491,466	12,818	0	602,938	615,756
C-4265	87/09/03	1,547,219	0	0	0	0
C-4122	87/03/13	1,753,708	3,253	0	17,606	20,858
C-4208	87/04/10	1,972,481	22,249	0	583,596	605,845
C-4130	87/09/09	2,928,180	0	0	0	0
C-4117	87/08/05	4,147,532	0	0	0	0
C-4062	87/07/23	9,802,834	0	0	584,523	584,523
S-1063	81/12/11	1,337,008	0	0	0	0
S-1069	82/06/21	1,101,585	0	0	1,272,507	1,272,507
S-1454	82/06/23	1,203,480	0	0	1,120,572	1,120,572
S-1749	83/04/11	826,145	0	0	1,041,563	1,041,563
S-1824	83/05/05	994,989	0	0	1,237,579	1,237,579
S-1303	83/01/10	1,026,150	0	0	1,073,070	1,073,070
S-1737	83/04/13	1,028,607	0	0	940,259	940,259

S-1721	83/04/11	1,068,169	0	0	0	0
S-1739	83/04/11	1,252,934	0	0	0	0
S-1688	83/04/08	1,398,119	0	0	1,689,175	1,689,175
S-1764	83/04/11	1,477,660	0	0	1,500,847	1,500,847
S-1722	83/03/22	1,477,773	0	0	1,676,763	1,676,763
S-1814	83/05/02	1,544,140	8,208	0	1,957,291	1,965,499
S-1768	83/04/06	1,562,603	0	0	0	0
S-1707	83/04/13	1,603,096	7,855	0	1,550,762	1,558,617
S-1728	83/04/08	1,693,840	0	0	1,962,324	1,962,324
S-1750	83/03/25	1,854,120	0	0	2,276,495	2,276,495
S-1765	83/04/06	1,892,485	0	0	1,921,612	1,921,612
S-1752	83/04/12	2,118,592	7,446	0	2,252,159	2,259,604
S-1784	83/04/06	2,157,790	0	0	0	0
S-1678	83/04/13	2,244,732	6,000	0	2,719,373	2,725,373
S-1813	83/07/12	2,326,750	13,008	0	2,237,153	2,250,162
S-1742	83/04/12	2,407,879	6,644	0	2,383,469	2,390,113
S-1812	83/06/29	2,777,515	1,418	0	2,765,577	2,766,995
S-1763	83/04/20	2,999,692	6,703	0	2,711,319	2,718,022
S-1705	83/04/13	3,292,108	8,087	0	1,992,229	2,000,316
S-2814	84/08/30	964,172	3,797	0	1,070,970	1,074,767
S-2785	84/12/04	1,835,389	91,769	5,968	3,507,331	3,605,068
S-2977	85/06/04	976,378	0	0	1,078,657	1,078,657
S-2998	85/05/13	1,051,779	47,743	0	1,033,956	1,081,699
S-2983	85/05/23	1,086,644	0	0	1,113,860	1,113,860
S-2969	85/07/31	1,121,485	97,309	0	1,219,093	1,316,402
S-2975	85/08/20	1,198,416	46,388	0	1,716,380	1,762,768
S-3421	85/09/17	1,209,025	0	0	1,431,727	1,431,727
S-2912	85/01/04	1,256,394	38,228	2,355	1,385,981	1,426,565
S-2965	85/05/13	1,259,123	294,900	0	1,398,907	1,693,807
S-3228	85/06/19	1,354,310	13,058	0	1,344,548	1,357,606
S-2966	85/09/03	1,429,356	131,783	0	1,440,041	1,571,825
S-3326	85/08/08	1,588,375	82,692	0	1,754,227	1,836,919
S-3420	85/10/04	1,664,930	0	0	1,795,321	1,795,321
S-2968	85/07/08	1,857,539	398,240	74,218	2,224,488	2,696,945
S-2967	85/07/08	1,876,135	251,585	0	2,697,873	2,949,458
S-2820	85/06/04	1,986,633	101,483	0	2,346,823	2,448,307
S-3423	85/09/25	2,773,755	11,341	0	3,040,028	3,051,369
S-3812	86/03/25	758,000	9,208	0	1,452,684	1,461,891
S-3747	86/05/15	889,696	7,798	0	1,002,142	1,009,939
S-3793	86/05/16	973,290	2,000	0	1,153,941	1,155,941
S-3746	86/04/22	1,059,860	27,322	0	1,183,729	1,211,051
S-3621	86/05/13	1,094,051	45,684	0	2,238,055	2,283,739
S-3721	86/03/13	1,146,975	0	0	1,306,508	1,306,508
S-3713	86/10/01	1,173,840	7,621	0	960,987	968,607
S-3855	86/06/25	1,230,050	0	0	1,450,954	1,450,954
S-3709	86/09/15	1,242,505	8,246	0	1,576,859	1,585,104
S-3708	86/06/04	1,270,000	66,807	0	1,280,864	1,347,671
S-3717	86/03/24	1,288,035	9,910	0	1,415,803	1,425,713
S-3761	86/05/23	1,474,228	0	0	1,664,428	1,664,428
S-3803	86/07/16	1,526,905	109,643	0	1,786,125	1,895,767
S-3770	86/05/23	1,768,220	4,310	0	1,918,537	1,922,847
S-4034	86/07/24	1,791,273	8,915	0	1,816,199	1,825,114
S-3804	86/07/23	1,810,634	5,507	0	1,916,708	1,922,215
S-3748	86/04/24	1,839,017	0	0	2,092,375	2,092,375

S-4133	86/09/25	1,897,753	38,322	0	2,004,324	2,042,645
S-3894	86/06/25	1,929,750	0	0	2,068,416	2,068,416
S-3794	86/07/02	1,955,815	16,591	0	2,136,779	2,153,370
S-3789	86/07/29	2,666,875	0	0	2,471,716	2,471,716
S-3825	86/05/27	2,792,500	0	0	2,943,145	2,943,145
S-4069	86/07/24	2,905,492	34,746	0	3,389,132	3,423,879
S-3771	86/05/23	2,998,759	0	0	2,668,917	2,668,917
S-3846	86/07/24	3,063,092	15,681	0	3,036,318	3,051,999
S-3749	86/07/15	3,991,445	64,527	0	4,464,561	4,529,088
S-4203	87/05/28	1,015,149	31,320	0	945,267	976,587
S-4698	87/08/27	1,076,298	0	0	0	0
S-4202	87/05/26	1,172,220	0	0	639,185	639,185
S-4201	87/04/29	1,296,100	0	0	658,308	658,308
S-4205	87/05/19	1,443,336	0	0	1,376,263	1,376,263
S-4204	87/05/20	1,443,584	0	0	169,955	169,955
S-4679	87/07/14	1,637,480	0	0	1,033,542	1,033,542
S-4071	87/06/10	1,644,100	14,670	0	644,955	659,626
S-1689	87/08/28	2,091,715	0	0	0	0
S-4673	87/07/03	2,348,662	0	0	1,748,709	1,748,709
S-4637	87/06/10	2,365,335	0	0	52,625	52,625
S-4351	87/07/23	2,465,508	0	0	920,146	920,146

Datafile C - Ministry
Normal Contracts 1980-1987
(Excluding Coquihalla and Annacis)

PROJNO AWRDATE	MOTH-EST	TEMPRI EW	EWOAU	EWOPD	OTHPD	TOTPD-fest	TOTPD	VAR	UPLPD	#OF UPL
B-0557 80/11/06	1,832,895	2,014,220 08	71,800	69,727	0	2,156,152	2,225,879	0.11	0	0
B-1374 81/03/20	5,160,407	4,879,258 14	96,400	87,814	10,470	4,912,372	5,010,656	0.03		
B-1079 82/01/15	3,245,000	2,992,777 07	44,720	43,614	0	2,675,885	2,719,499	-0.09		
B-1102 82/07/02	3,290,887	2,972,320 05	48,300	46,241	0	3,661,635	3,707,876	0.25		
B-1400 82/09/13	3,680,795	3,167,472 05	26,850	11,673	0	3,164,672	3,176,344	0.00		
B-0692 82/09/13	5,273,500	2,755,904 14	1,174,448	1,949,302	783,000	3,165,576	5,897,878	1.14		
B-1306 83/02/07	1,320,000	1,657,651 01	63,060	63,060	0	1,646,058	1,709,118	0.03		
B-1307 83/02/07	1,439,410	1,125,529 02	87,880	87,775	0	1,125,028	1,212,803	0.08	5,695	1
B-0551 83/03/24	2,396,250	1,716,202 06	20,500	19,216	0	1,703,264	1,722,479	0.00		
B-1332 83/04/07	800,612	971,825 04	21,200	22,347	0	1,025,355	1,047,702	0.08		
B-1677 83/04/08	9,640,444	5,548,601 07	98,920	65,324	0	5,602,723	5,668,047	0.02		
B-1733 83/04/12	2,209,642	1,447,893 04	6,400	6,158	0	1,474,238	1,480,396	0.02		
B-1381 83/04/19	1,341,797	1,669,695 01	6,000	5,050	0	1,731,240	1,736,290	0.04		
B-1102 83/05/09	3,100,000	2,688,997 03	32,000	30,492	0	2,766,094	2,796,586	0.04	179,477	2
B-1736 83/06/07	1,066,201	1,132,735 07	62,300	60,173	0	1,227,929	1,288,102	0.14		
B-2300 83/07/25	2,216,240	1,245,275 08	62,300	60,370	0	1,274,481	1,334,852	0.07		
B-1716 83/10/25	1,045,099	1,206,293 05	6,500	6,231	0	1,177,377	1,183,608	-0.02		
B-2347 83/12/07	2,362,651	2,435,656 07	409,349	416,816	0	2,525,628	2,942,444	0.21		
B-2428 84/02/29	1,246,326	1,072,479 02	6,400	5,608	0	1,097,198	1,102,805	0.03		
B-1420 84/05/30	1,455,000	1,026,687 02	11,100	10,455	0	987,123	997,578	-0.03		
B-2646 84/10/16	1,949,762	1,508,949 04	12,700	15,601	0	1,651,551	1,667,152	0.10	0	0
B-2899 85/04/11	1,364,528	1,359,298 04	16,625	23,669	0	1,358,871	1,382,540	0.02		
B-2387 85/05/22	1,811,776	1,598,837 02	11,798	21,555	0	1,595,053	1,616,608	0.01		
	59,249,222	48,194,551 0	2,397,549	3,128,270	793,470	49,705,503	53,627,243		185,172	3
C-2901 80/01/02	4,201,498	4,669,715 14	119,300	282,256	168,935	8,753,972	9,205,163	0.97	3,329,456	13 *
C-4477 80/01/25	12,718,000	9,982,237 14	156,500	245,045	150,450	12,300,486	12,695,981	0.27	829,199	5 *
C-3962 80/08/03	3,699,328	2,804,958 08	41,680	32,478	0	3,948,349	3,980,826	0.42		
C-2792 80/09/19	6,221,177	3,735,381	0	0	0	5,942,421	5,942,421	0.59	1,152,344	6 *
C-0748 81/07/23	14,124,125	11,676,278 14	378,407	328,973	16,500	16,439,566	16,785,039	0.44		
C-0746 82/03/11	4,468,307	3,783,316 05	109,000	109,135	0	2,685,382	2,794,517	-0.26		
C-1121 82/03/25	2,373,663	1,916,914 14	62,600	220,474	161,327	3,299,474	3,681,275	0.92		
C-0747 82/04/20	2,807,955	1,590,749 08	43,993	43,099	0	1,748,780	1,791,879	0.13		
C-1138 82/05/07	4,659,780	2,742,593 04	18,630	18,711	0	3,250,167	3,268,878	0.19		
C-1312 82/09/13	3,875,000	2,366,880 14	49,256	79,275	29,858	2,841,718	2,950,852	0.25	156,378	5 *
C-1690 83/03/21	4,242,762	3,011,352 12	33,004	32,267	0	3,629,673	3,661,940	0.22	143,036	3 *
C-0916 83/03/29	7,743,000	7,058,912 03	1,830	1,822	0	7,213,852	7,215,674	0.02	0	0 *
C-1711 83/04/11	4,738,364	3,576,448 14	69,300	81,307	35,100	4,905,910	5,022,317	0.40	400,801	9 *
C-1723 83/04/11	9,514,000	8,855,071 05	93,500	88,665	0	9,261,222	9,349,886	0.06	51,331	1 *
C-1725 83/04/11	1,811,000	1,635,608 14	85,100	144,411	59,200	2,784,797	2,988,408	0.83	458,505	7 *
C-0982 83/04/12	1,746,825	1,429,469 09	27,442	25,929	0	1,581,463	1,607,391	0.12	3,296	1 *
C-1710 83/04/13	3,743,703	2,091,503 12	111,155	105,823	0	2,554,789	2,660,612	0.27	141,500	2 *
C-1743 83/04/13	8,257,645	6,463,920 07	80,000	89,747	0	8,308,701	8,398,448	0.30	899,337	16 *
C-0282 83/04/13	8,239,000	7,779,770 14	37,925	73,468	73,448	10,607,002	10,753,918	0.38	528,419	4 *
C-1744 83/04/13	1,256,390	959,571 14	97,589	132,535	32,774	1,658,793	1,824,103	0.90		
C-1684 83/06/21	8,752,000	7,155,348 14	197,250	308,200	111,563	9,723,810	10,143,573	0.42	85,379	2 *
C-1841 83/09/01	980,397	718,851	0	0	0	1,286,570	1,286,570	0.79		
C-2329 83/11/17	1,260,156	1,321,730 09	31,124	30,974	0	1,550,809	1,581,784	0.20		
C-2431 84/03/21	3,715,000	2,719,801 14	45,579	95,826	48,509	2,949,415	3,093,750	0.14	67,727	3 *
C-2594 84/06/11	2,757,000	2,358,082 04	48,300	42,590	0	2,806,558	2,849,147	0.21	387,387	4 *
C-2593 84/06/11	7,368,770	5,594,809 14	496,490	724,415	282,115	7,595,130	8,601,660	0.54	102,882	6 *
C-2819 85/01/04	10,200,000	7,348,980 14	346,695	666,379	341,075	7,684,899	8,692,352	0.18	274,690	5 *
C-3561 85/12/17	5,200,000	2,868,484 01	45,000	35,221	0	3,095,603	3,130,824	0.09		
C-3600 86/03/12	2,133,080	1,525,317 04	25,000	22,786	0	2,502,242	2,525,028	0.66		
C-3563 86/06/04	2,528,796	2,099,115 05	116,500	115,348	0	2,962,622	3,077,970	0.47		
C-3238 86/07/18	776,980	888,793	0	0	0	1,487,672	1,487,672	0.67		
	156,113,701	122,729,953 0	2,968,149	4,177,159	1,510,856	157,361,846	163,049,861		9,011,666	92

* Data file D - 18 Grade Construction Contracts for which Unit Price Letter Information Compiled

PROJNO	AWRDATE	MOTH-EST	TENPRI	EW	EWOAU	EWOPD	OTHPD	TOTPD-fest	TOTPD	VAR	UPLPD	#OF UPL
S-1069	82/06/21	1,150,975	1,101,585		0	0	0	1,272,507	1,272,507	0.16		
S-1454	82/06/23	1,330,000	1,203,480		0	0	0	1,120,572	1,120,572	-0.07		
S-1303	83/01/10	1,231,000	1,026,150		0	0	0	1,073,070	1,073,070	0.05		
S-1722	83/03/22	1,600,000	1,477,773		0	0	0	1,676,763	1,676,763	0.13		
S-1750	83/03/25	2,091,500	1,854,120		0	0	0	2,276,495	2,276,495	0.23		
S-1765	83/04/06	1,665,080	1,892,485		0	0	0	1,921,612	1,921,612	0.02		
S-1688	83/04/08	1,341,223	1,398,119		0	0	0	1,689,175	1,689,175	0.21		
S-1728	83/04/08	1,724,300	1,693,840		0	0	0	1,962,324	1,962,324	0.16		
S-1749	83/04/11	832,391	826,145		0	0	0	1,041,563	1,041,563	0.26		
S-1764	83/04/11	1,722,400	1,477,660		0	0	0	1,500,847	1,500,847	0.02		
S-1752	83/04/12	1,773,000	2,118,592	03	9,000	7,446	0	2,252,159	2,259,604	0.07		
S-1742	83/04/12	2,671,715	2,407,879	01	14,412	6,644	0	2,383,469	2,390,113	-0.01		
S-1705	83/04/13	2,604,445	3,292,108	04	8,250	8,087	0	1,992,229	2,000,316	-0.39		
S-1678	83/04/13	2,457,500	2,244,732	02	6,750	6,000	0	2,719,373	2,725,373	0.21		
S-1707	83/04/13	1,387,325	1,603,096	04	8,102	7,855	0	1,550,762	1,558,617	-0.03		
S-1763	83/04/20	3,075,000	2,999,692	05	8,450	6,703	0	2,711,319	2,718,022	-0.09		
S-1814	83/05/02	1,577,000	1,544,140	02	8,208	8,208	0	1,957,291	1,965,499	0.27		
S-1824	83/05/05	1,400,740	994,989		0	0	0	1,237,579	1,237,579	0.24		
S-1812	83/06/29	3,320,000	2,777,515	01	1,418	1,418	0	2,765,577	2,766,995	0.00		
S-2814	84/08/30	1,221,295	964,172	01	3,800	3,797	0	1,070,970	1,074,767	0.11		
S-2785	84/12/04	2,968,459	1,835,389	14	46,623	91,769	5,968	3,507,331	3,605,068	0.96		
S-2912	85/01/04	1,243,720	1,256,394	13	54,278	38,228	2,355	1,385,981	1,426,565	0.14		
S-2998	85/05/13	1,271,745	1,051,779	02	16,100	47,743	0	1,033,956	1,081,699	0.03		
S-2983	85/05/23	960,792	1,086,644		0	0	0	1,113,860	1,113,860	0.03		
S-2977	85/06/04	1,464,070	976,378		0	0	0	1,078,657	1,078,657	0.10		
S-3228	85/06/19	1,184,500	1,354,310		0	13,058	0	1,344,548	1,357,606	0.00		
S-3326	85/08/08	2,153,550	1,588,375	03	27,600	82,692	0	1,754,227	1,836,919	0.16		
S-2975	85/08/20	1,310,176	1,198,416		0	46,388	0	1,716,380	1,762,768	0.47		
S-3421	85/09/17	1,213,000	1,209,025		0	0	0	1,431,727	1,431,727	0.18		
S-3423	85/09/25	2,992,350	2,773,755		0	11,341	0	3,040,028	3,051,369	0.10		
S-3721	86/03/13	1,250,930	1,146,975		0	0	0	1,306,508	1,306,508	0.14		
S-3717	86/03/24	1,051,270	1,288,035	02	10,500	9,910	0	1,415,803	1,425,713	0.11		
S-3812	86/03/25	1,418,897	758,000	04	16,392	9,208	0	1,452,684	1,461,891	0.93		
S-3621	86/05/13	1,381,871	1,094,051	03	47,700	45,684	0	2,238,055	2,283,739	1.09		
S-3793	86/05/16	1,190,500	973,290	01	2,000	2,000	0	1,153,941	1,155,941	0.19		
S-3771	86/05/23	3,080,000	2,998,759		0	0	0	2,668,917	2,668,917	-0.11		
S-3770	86/05/23	1,458,000	1,768,220	01	4,310	4,310	0	1,918,537	1,922,847	0.09		
S-3761	86/05/23	1,910,367	1,474,228		0	0	0	1,664,428	1,664,428	0.13		
S-3794	86/07/02	2,460,000	1,955,815	02	17,200	16,591	0	2,136,779	2,153,370	0.10		
		68,141,086	62,686,108	0	311,093	475,080	8,323	69,538,004	70,021,408			

APPENDIX E

A MEMBER OF ARTHUR YOUNG INTERNATIONAL

Clarkson Gordon

Chartered Accountants
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December 8, 1987

Commissioner of Inquiry
Coquihalla and Related Highway Projects
202 - 333 Quebec Street
Victoria, B.C.
V8V 1X4

Dear Sirs:

Further to that agreement dated 17th day of August 1987 between:

> Her Majesty the Queen in Right of The Province of British Columbia As Represented By The Inquiry Commissioner, Douglas L. MacKay, appointed by Order in Council 1546/87
>
> and
>
> Clarkson Gordon Chartered Accountants, having a place of business at P.O. Box 10101, Pacific Center, 700 West Georgia Street, V7Y 1C7 in the City of Vancouver, in the Province aforesaid,

to provide the following services:

(a) assist and advise the Commissioner in reviewing the construction costs and cost Estimates of the Coquihalla and other recent highway projects, in particular by reviewing the Ministry of Transportation and Highways' contract documents and contractor invoices, reviewing the Ministry's procedures and systems for authorizing and making payments, and where necessary, by reviewing contractors' records;

(b) be available to assist as required in any further investigation undertaken by the Commissioner or other agencies beyond the terms of this contract;

(c) prepare and deliver a detailed report of the investigation's methods, findings, and recommendations for change;

(d) be available to the Commissioner and members of his staff for oral advice and consultation as required.

We report as follows:

I. METHODS EMPLOYED IN REVIEW

We commenced our investigation into construction costs by reviewing a "contract status report" provided by the Ministry of Transportation and Highways. This report dated August 10, 1987 listed approximately 700 contracts entered into by the Ministry during 1981 to 1987 for construction of bridges and roads.

The information listed consisted of the contract number, project number, project description, contract amount, amounts of any extra work orders, total authorized expenditures (that is, contract bid amount plus extra work orders), the actual expenditures, the percentage of actual expenditures compared to authorized expenditures and the balance, either overspent or remaining to be spent. It did not include the percentage of completion of the contract, so it was not possible to determine, from the listing, any projected costs to complete.

We originally decided to carry out a review of costs for all contracts where actual expenditures exceeded the contract bid amount plus extra work orders by more than 20%, or, on larger contracts, $500,000.

Using these criteria we selected 98 contracts, 15% of the total listed by the Ministry, with expenditures exceeding the contract bid amount plus extra work orders by percentages ranging from 10% to 286%.

Due to time constraints we reduced our selection to 15 contracts. These contracts included most of the largest overruns, and, to comply with the Commission's mandate, included a variety of locations throughout the Province.

The primary purposes of this review were:

(a) To document the increases by category, i.e. change in quantity of a bid unit; a new unit price and quantity set out in a unit price letter; or extra work by force account. This would show clearly the amount of work done without the benefit of competitive bidding.

(b) To document, in so far as possible, the reasons for the changes.

(c) To determine if there were irregularities in the authorization, awarding or conduct of the contracts, in the payment for the work, or in the systems for recording contracts.

The secondary objectives were to determine, if possible, on an average basis, the profit made by contractors from the work and to comment on the financial systems employed by the Ministry.

Having selected the 15 contracts, we obtained files for each of the contracts from the Financial Services Branch of the Ministry. These files contained the original contracts, progress Estimates, unit price letters, extra work orders, payment requests, cheque vouchers and other correspondence.

Based on this financial information we analysed the costs of the various contracts.

We obtained from the Engineering Division of the Ministry their files relating to the same selected contracts. These files contained detailed information on the contracts including progress Estimates, requests for unit price letters and extra work orders, correspondence with the contractors, inter-departmental memos, minutes of meetings and various reports relating to progress of the work.

We reviewed the engineering files to determine if the reasons for overruns could be ascertained. In this regard photocopies of selected documents were obtained for further review by ourselves and the Commission's engineering consultant, Mr. Tribe.

We requested and received permission to inspect the records of the contractors relating to the selected contracts. We also interviewed the contractors and where possible, the supervisors of the contracts.

A list of the selected contracts is included as Schedule "A" to this report. It consists of 12 construction, 2 bridge and 1 paving contract as follows:

5	Coquihalla Highway
2	Coquihalla Ancillary/Trans-Canada Highway Upgrade
2	Bullmoose - Tumbler Ridge
2	Fraser River (Annacis) Crossing
1	Revelstoke - Mica Dam
1	Lougheed Highway
1	Garibaldi Highway
1	Vancouver Island Highway

Schedule "A" shows that, for the 15 contracts, the total paid to contractors was $180,949,033. The original contracts totalled $89,730,578 or 49.6% of the total paid. The balance of $91,218,455 or 50.4% of the total paid consisted of quantity over/underruns, unit price letters or special provision adjustments and extra work orders.

The significance of these figures is not to show the amounts of the overruns, the reasons for which are better dealt with in the Commission's consulting engineer's report, but to stress the percentage of work which was awarded without the benefit of competitive bidding. In this respect the seven Coquihalla and related contracts are not significantly different to other contracts we reviewed.

II. COQUIHALLA HIGHWAY COSTS

In an endeavor to determine the total costs of the Coquihalla Highway we reviewed the Public Accounts - Financial Statements for the Province of British Columbia for the years ended March 31, 1985 and 1986. We also examined the financial Estimates for the years ending March 31, 1986, 1987 and 1988.

In addition to the Public Accounts we also reviewed the Annual Reports for the Ministry of Transportation and Highways for the years ended March 31, 1985 and 1986.

We found that $281,072,953 was included as a sub-vote under, Economic Renewal Vote 74, in the 1985/86 Estimates for Coquihalla Highway Construction. The description of this sub-vote in the Estimates reads as follows:

> "(a) Coquihalla Highway Construction - this sub-vote provides for the construction of the Coquihalla Highway and related projects (underlining ours). This includes planning, engineering, design, survey, construction, reconstruction, paving and right-of-way acquisition and property, equipment and machinery purchases."

The Public Accounts for 1985/86 show, under Economic Renewal Vote 74, sub-vote "Coquihalla Highway Construction", actual expenditures of $278,375,814 against an appropriation of $281,072,953, an apparent under-expenditure of $2,697,139. The sub-vote description is identical to that included in the Estimates (see (a) above).

We understand that the decision to describe the various projects, included in the Estimates for Coquihalla Highway and Related Projects and Annacis Crossing, as "Economic Renewal" was made by the Chairman of Treasury Board.

By letter dated April 1, 1985 (Request No. 1/86, Appendix H1) addressed to the Chairman, Treasury Board, the Minister of Transportation and Highways requested "authorization, on a blanket basis, to call and award the construction/maintenance contracts outlined below and further detailed in the attached schedule".

The amount requested for Vote 74 was $479,698,000; this consisted of Coquihalla Highway $288,571,000 and Fraser River Crossing - Annacis $191,127,000.

The total approved by Treasury Board for Vote 74 under request 1/86 was $456,055,000 a difference of approximately $23 million. The first paragraph on page 2 of the request indicates that "the additional funding of $23 million will be requested later via a special warrant".

Attached to the request is a listing of the various projects for the Coquihalla Highway and Related Projects. These projects total $288,571,000.

The request was approved by the Chairman, Treasury Board on May 16, 1985.

By letter dated July 15, 1985 (Request No. 8/86, Appendix H2), addressed to the Chairman, Treasury Board, the Minister of Transportation and Highways requested "authority to call and award contracts and carry out day labour works totalling $156 million as detailed below". $70 million of the request was for Vote 74, $42 million of which was as follows:

Coquihalla Highway Phase 1 current shortfall	$ 7.0 million
Coquihalla Highway Phase 2	20.0 million
Coquihalla Highway - Merritt - Peachland	10.0 million
Highway 1 - Chilliwack Conversion to Freeway	5.0 million
	$42.0 million

The request was later cancelled.

By request No. 9/86 dated August 2, 1985 (Appendix H3) addressed to the Chairman, Treasury Board, the Minister of Transportation and Highways sought "authority to call and award contracts and carry out day labour works totalling $128.8 million as detailed below". The request for Vote 74 was still $70 million and the Coquihalla portion remained at $42.0 million as set out in the previous request. The only change from Request 8/86 was the reduction in funds from projects other than the Coquihalla and Annacis highway projects.

The request was approved by Treasury Board as communicated to the Minister of Transportation and Highways by letter dated September 23, 1985 (Appendix H4).

By letter dated December 9, 1985 (Request No. 21/86, Appendix H5) addressed to the Chairman, Treasury Board, the Minister of Transportation and Highways requested "further to our T.B. submission 9/86 the Ministry is now requesting that special warrants be issued in the following amounts to cover unforeseen expenditures not provided for in the Ministry's Estimates".

The total request was $118.8 million of which $73,100,000 was for Vote 74:

Coquihalla Highway Construction	$61,800,000
Fraser River Crossing (Annacis)	11,300,000
	$73,100,000

The request was circulated to the members, approved by Treasury Board and signed by the Chairman, Treasury Board on January 8, 1986, but the special warrant was not issued.

By letter dated January 20, 1986 (Request No. 21/86A, Appendix H6) addressed to the Chairman, Treasury Board, the Minister of Transportation and Highways requested a special warrant in the amount of $118.8 million for Vote 69 - Highways Operations.

A memo to the Chairman, Treasury Board from the Secretary, Treasury Board dated January 21, 1986 (Appendix H7) indicated that the submission replaced a previous submission which split the request between Votes 69 and 74. "The Ministry will be using Vote 74 only for those items specifically related to the main Coquihalla Highway. All the remaining offsite projects will be charged to Vote 69." The request was approved by the Chairman Treasury Board on January 23, 1986 and the special warrant was signed by the Lieutenant Governor on January 31, 1986.

By memorandum dated January 29, 1986 (Appendix H8) the Director of Financial Services of the Ministry of Transportation and Highways advised Ministry staff and officials that "all costs associated with those projects appearing on the attached detailed listing are to be charged to Vote 69 ...". The instruction resulted in a number of journal entries being prepared, transferring expenditures on some projects that had been recorded in Vote 74 to Vote 69 - Highways Operations. These projects previously defined as "Coquihalla and Related" Highway Projects were reclassified as "ancillary and offsite" projects.

The Ministry also maintained two monthly schedules that summarized the projects included in the Coquihalla Highway:

(a) SUMMARY OF EXPENDITURES, showing the total expenditures for the fiscal year to date and the total expenditures to date, including prior years;

(b) SUMMARY OF AUTHORIZATIONS AND EXPENDITURES, showing the value of contracts plus work orders approved for the fiscal year, the expenditures during the fiscal year and the balance underspent or overspent on each project during the year to date.

These summary schedules included both main Coquihalla and Related (ancillary and offsite) Projects, but commencing February 28, 1986 these listings ceased to include the projects that were transferred from Vote 74 to Vote 69.

The projects that were included as "Coquihalla Highway" in the Ministry's December 1985 schedules but not included at February 1986, incurred total expenditures of $82,904,818 during the 1985/86 fiscal year.

A listing of these projects is included as Schedule "D" to this report. The schedule shows that $68,650,000 was appropriated in Vote 74 Estimates 1985/86 for projects that incurred expenditures of $76,822,926 and which were subsequently charged to Vote 69. The appropriation remained in Vote 74.

As listed on Schedule "D", the majority of these projects were included in a "Summary of 1985/86 Special Warrant Project Authorizations - Highway Capital Construction" (Appendix H9) that was compiled March 20, 1986, referred to during debate by the Minister of Transportation and Highways and tabled in the legislature on March 26, 1986.

Schedule "E" lists projects included in Coquihalla Highway, as shown in the Ministry Brief to Commissioner Inquiry, compared to the amounts included in the 1985/86 authoriziations for these projects. The expenditures exceed Estimates by $66,964,120. The schedule is not presented as a full accounting of all the differences but we suggest that it is a reasonable summary of the over-expenditures on the Coquihalla Highway, excluding ancillary roads and Trans-Canada Highway improvements during 1985/86.

Pages 37 and 38 (Appendix H10) of the Annual Report of the Ministry of Transportation and Highways for the year 1985/86 lists the expenditures under various votes by Electoral Districts. For Vote 74 "Coquihalla" the total expenditures shown were $278,375,814.

These expenditures did not include the projects that had been transferred from Vote 74 to Vote 69 (see Schedule "D").

Pages 279 to 287 (Appendix H11) of the same Annual Report lists, under the heading "Coquihalla", numerous highway construction projects. Seven of these projects:

C2662	Floods - Hope
C2871	Hope - Nicolum Creek
C2872	Trans-Canada Highway - Whatcom Interchange
C2873	Trans-Canada Highway - Popkum Interchange
C2874	Kamloops-Aberdeen Interchange - Highways No. 1 and No. 5A
C2906	Trans-Canada Highway - Wahleach Power Station - Cheam View
C2907	Trans-Canada Highway - Hunter Creek Interchange

are included in Schedule "D" as being transferred out of Coquihalla Vote 74 to Vote 69.

Of interest are the Ministry "remarks" on page 287 relating to Project C2874 (the Kamloops-Aberdeen Interchange)... "the interchange will form part of the final Coquihalla Freeway".

The Silverhope Creek Bridge contract provides an example of the effect of the authorizations and transfers that occurred in 1985/86. The Silverhope Creek Bridge contract (B2880) received Treasury Board authorization to spend $2,300,000 during 1985/86 under Vote 74.

This contract was transferred to Vote 69 in February 1986 with the result that actual expenditures in the amount of $2,040,028 were charged against the budget for Vote 69. The authorization to spend $2,300,000 remained in Vote 74.

The same Silverhope Creek Bridge contract, part of the transfer from Vote 74 to Vote 69, was also part of the list of contracts tabled in the legislature on March 26, 1986. A further $2,300,000 was therefore authorized to cover expenditures on the Silverhope Creek Bridge contract now charged to Vote 69.

In contrast, contract C2871, Hope-Nicolum Creek received Treasury Board authorization to spend $18,500,000 during 1985/86 under Vote 74.

This contract was transferred to Vote 69 in February 1986 with the result that actual expenditures in the amount of $21,147,560 were charged against the budget for Vote 69. The authorization to spend $18,500,000 remained in Vote 74.

The same Hope-Nicolum Creek contract, part of the transfer from Vote 74 to Vote 69, was not included in the list of contracts tabled the legislature on March 26, 1986. This inconsistency of treatment highlights the cover-up of the overruns in "Coquihalla and Related Project" costs. If contract B2880 had to be included in the special warrant why did not contract C2871?

Mr. Price, the former Director of Financial Services of the Ministry of Transportation and Highways who prepared the list of contracts tabled in the legislature admitted the inaccuracy of the list describing it as "out of context with reality".

Introduced at the Commission's public hearing on Thursday, November 5, 1987 was a "Special Warrant Briefing note" for Special Warrant #5 Ministry of Transportation and Highways, Vote 69 Highways Operation, amount $118,800,000.

The material contained within the briefing note was prepared, by the Treasury Board staff, for the Minister of Finance. It lists potential questions and answers to prepare the Minister when presenting the special warrants for approval in the Legislature. We draw your attention to the following:

Question #3 - Why were these projects not included in the Ministry's 1985/86 budget?

Answer #3 - The government chose to make an early start on a number of projects around the province and to start acquiring rights-of-way required for the 1986/87 highways construction program. The government decided not to use the alternative of waiting for the next budget cycle which would have delayed, considerably, the start of construction on these projects.

The projects referred to are those listed in Appendix H9. As previously reported, most of these had been authorised under Vote 74 in the Ministry's Treasury Board Request 1/86 (see Schedule "D"). The answer is therefore incorrect.

Conclusion

The scope of Economic Renewal, Coquihalla Highway and Related Projects as defined by the Chairman of Treasury Board and the Ministry of Transportation and Highways changed between December 1985 and February 1986. These changes were concealed by the transfer of costs, relating to a number of projects, from Vote 74 to Vote 69 and the non-disclosure of these transfers in the Annual Public Accounts.

The Ministry's Annual Reports record expenditures on an annual basis and do not show cumulative expenditures for individual projects or for larger projects such as the Coquihalla.

Given the foregoing it is not possible to determine from the Public Accounts or the Annual Reports a total cost for the Coquihalla Highway. In fact, the effect of the change in the projects assigned to Vote 74 was to obscure this cost even within the 1985/86 fiscal year and allowed overruns on the Coquihalla Highway to go undetected.

Figures provided by the Ministry of Transportation and Highways, in their brief to the Commissioner Inquiry dated September 1987, are summarized on Schedule "C". This summary shows a total cost for the Coquihalla Highway of $843,816,594. Ancillary Projects and Trans-Canada Highway Improvements together add a further $150,588,143 for a total cost of $994,404,737. It should be noted that these costs include $250,000,000 of estimated costs to completion for Phases II and III and do not include any allocation of Ministry overhead costs.

We have not audited these figures. The review we have performed covered a very small portion of the total costs. For those contracts selected we only dealt with the recorded costs and made no attempt to determine any unpaid balances outstanding, if any.

III. IRREGULARITIES OF THE SYSTEM

In keeping with the purposes of this review, part (c)

> "To determine if there were irregularities in the authorization, awarding or conduct of the contracts, in the payment for the work, or in the systems for recording contracts.",

the following should be considered:

(a) Schedule "E" of the Ministry's Brief to the Commissioner indicates an expenditure of $5 million in excess of the authorized amount for the fiscal year 1986/87.

The 1986/87 Public Accounts have not yet been audited therefore it is possible that the amounts shown may change. If the finalized Financial Statements do confirm a $5 million over-expenditure it would appear that the Ministry is in breach of the Financial Administration Act, Section 18.

(b) The "Summary of Authorizations and Expenditures - Coquihalla Highway" maintained by the Ministry of Transportation and Highways, showed the following amounts for work that had been authorized (that is contract bid amount plus unit price letters and extra work orders) during the year:

July 31, 1985	$287,502,299
August 31, 1985	302,404,505
September 30, 1985	311,004,502
October 31, 1985	318,219,000
November 30, 1985	352,923,000
December 31, 1985	374,903,000

Section 25 of the Financial Administration Act reads as follows:

"Agreements:

25. (1) No agreement or undertaking of any kind providing for the payment of money by government shall be entered into that would result in an expenditure in the then current fiscal year in excess of an appropriation for that fiscal year.

(2) It is a term of every agreement providing for the payment of money by the government that payment of money that becomes due under the agreement is subject to an appropriation being available for that agreement in the fiscal year when the payment falls due.

(3) The Treasury Board may by directive set conditions to be observed before agreements or undertakings providing for the payment of money by the government are entered into."

The appropriation in Vote 74 for the fiscal year 1985/86 was $281,072,953. It would therefore appear that the Ministry was in breach of Section 25(1) of the Financial Administration Act from at least July 31, 1985.

(c) In our Schedules "B8" and "B10" we referred to Ministry officials falsifying Progress Estimates. Further details of these falsifications are as follows:

Ladner Creek Bridge - Schedule "B8"

When the decision was made to extend the length of the bridge, the sub-contractor ordered more structural steel from the supplier. The contract terms with the Ministry did not allow approval for payment until the structural steel was installed in place. The steel supplier was therefore concerned about the ability of the sub-contractor to carry the extra costs of the material while awaiting payment by the Ministry. Accordingly the supplier insisted on payment prior to delivery of steel.

Ministry officals altered progress Estimates to show that the structural steel was installed, in order for payment to be made on the contract so that money could be made available to the steel supplier. Eventually the Ministry decided to purchase the steel directly from the supplier to maintain ownership if the sub-contractor should run into financial difficulties.

Great Bear Snow Shed - Schedule "B10"

Much of the work done on this contract was covered by Extra Work Orders. The terms for the extra work were not properly authorized before the work was completed. As a result, the contractor had difficulty in receiving payment for the extra work carried out. Ministry officials altered a number of progress Estimates, increasing the quantities above the work actually done. The contractor was therefore paid for work not done in order to compensate for slow payment on work that had been done.

According to evidence at the public hearing on October 20, 1987 this "over-progressing" reached an amount of approximately $700,000. When the costs of this contract were finally settled, in February 1987, the progress Estimates were adjusted to the correct amounts and the contractor received a final unit price letter for $615,718.

Although there appears to have been no personal benefit received by Ministry officials or the contractors arising from either of these falsifications, legal opinions should be sought regarding breaches of the Financial Administration Act and possibly the Criminal Code.

(d) Whether the over-expenditures shown on Schedule "E" have been legally approved by the legislature within the provisions and intent of the Financial Administration Act.

(e) The propriety of submitting to the legislature the "Summary of 1985/86 special warrant project authorizations - Highway Capital Construction".

(f) The circumstances of obtaining a special warrant in 1985/86 when it had been known from the beginning of the 1985/86 fiscal year that the expenditures were anticipated and there had been numerous opportunities to bring the expenditures to the attention of the Legislature whilst it was sitting during the year.

IV. REVIEW OF CONTRACTORS' RECORDS

The fifteen contracts given our detailed review were carried out by ten companies. Each contractor calculated "profit" on a particular project according to his own internal costing requirements, therefore a precise measure of profitability cannot be accurately determined. We have not audited the contractors or otherwise attempted to verify the information they made available to us other than to determine that their records corroborated the Ministry's information. Based on conversations with the contractors and their accountants. We determined the following:

On each contract, contractors aim for a gross profit of 20% of revenue to cover overhead and contractors' profit. Information provided on 8 out of the 15 contracts suggests that recent experience has been to earn an average gross profit of approximately 10% while overhead costs were in the 6% to 10% range. Contractors believed they were making only a small profit and some were taking a loss on construction projects.

All of the contractor personnel interviewed indicated the present climate surrounding road and bridge construction is extremely competitive. Some suggested this climate was due to the recent recession and high levels of unemployment in British Columbia. Contractors bid low in order to have their equipment working rather than idle. Some, union, contractors suggested prices were driven down to competitively bid against non-union contractors.

Due to low expectation of profit or indeed losses on highway contracts and the highly competitive climate surrounding road construction, a number of contractors are getting out of the construction business. A few are currently trimming their operations in this area and diversifying.

Digests of the financial analysis and relevant information extracted from Ministry files and information obtained from the contractors are included as Schedules "B" to this report.

V. REVIEW OF MINISTRY FINANCIAL SYSTEMS

It became evident through our review of Ministry Financial Services files, that there is little liaison between personnel of the Financial Services and Construction departments within the Ministry.

Financial Services officials simply multiply quantities times authorized unit prices and check additions on progress Estimates and extra work orders submitted for payment. No review of unusual variances or total costs are carried out to determine if payment is reasonable or in accordance with the completion stage of a contract.

Documentation is not maintained in the Financial Services Department regarding:

(a) reasons for overruns or changed conditions,
(b) the percentage of completion on contracts,
(c) the budget requirement for projects as a whole.

While plans are created each year when submitting requests to Treasury Board for funding of proposed projects for that year, no efforts are made to ensure work planned and funded was actually accomplished during the year.

The result of this system is that the costs of each project are not properly controlled. If costs overrun in a particular year, some projects planned for that year will be deferred to the following year. To spend within the annual approved financial appropriation is the only financial "control". There is therefore no incentive to prepare proper cost Estimates because there is no accountability to remain within those Estimates.

On many contracts there was a considerable delay after the project work was completed before contractor's claims are settled. As many as 33 out of 72 projects on the Coquihalla Highway still remain to be settled.

In addition to obscuring the actual cost of projects these delays make cost control more difficult and strain the financial resources of contractors and sub-contractors.

During our review of the operations of the Ministry of Transportation and Highways we obtained from the Ministry of Finance and Corporate Relations a copy of a draft report prepared by the Executive Director, Internal Audit, headed "Contract Administration Ministry of Transportation and Highways", and sent by him to the Director, Financial Services, Ministry of Transportation and Highways under cover of letter dated June 11, 1987.

We do not wish to cover this report in detail, as it is still in draft form and we understand the Ministry of Transporation and Highways' staff do not fully agree with the contents. There are, however, a number of points raised in the report that our investigation has confirmed. These are:

(a) The draft report deals with Section 49 of the Ministry of Transportation and Highways Act and states "The purpose of Section 49 is to ensure that, wherever practicable, all contracted work will go to tender and that the contracting process is just and equitable."

    As covered in our report, we found a considerable amount of work that was not subject to tender. This work was authorized by extra work orders or unit price letters.

(b) The draft report deals with the memorandum dated January 29, 1986 (Appendix H8) from the Ministry of Transporation and Highway's Director of Financial Services notifying staff of the transfer of costs from Vote 74 to Vote 69.

(c) The draft report deals with Orders for Extra Work being approved after the work has been done. As covered in our report, we found examples of this in most of the projects we examined.

Conclusion

The Ministry's contract estimating procedures are imprecise; the Estimates are not used as a yardstick against which to measure contract performance.

The Ministry's financial controls over construction costs are weak and could be subject to abuse, if there was to be collusion between a contractor and Ministry employees.

The best safeguard against abuse, the bidding process, is made ineffective when large amounts of extra work are given to contractors after a contract has been awarded.

VI. OTHER MATTERS

During the course of our review we met with officials from the British Columbia Government Employees Union and the Carpenters Union to discuss a number of their concerns. The issues discussed were either:

(a) hearsay evidence which was not corroborated or substantiated; or
(b) had no impact on the costs of the Coquihalla Highway.

We therefore have not dealt with these matters in this report.

We also met with the R.C.M.P. Commercial Crime Section to discuss their investigations into allegations of invoicing improprieties. We understand that they have concluded their investigations without criminal charges being contemplated. Due to the lack of supported facts, investigation of these matters has not been carried further by ourselves.

We appreciate the opportunity to have assisted you during your Inquiry and thank you and your staff for your co-operation and advice.

Yours very truly,
CLARKSON GORDON

David Hooper
DH/cl:2991h

COQUIHALLA AND OTHER RECENT HIGHWAY PROJECTS

SCHEDULE OF CONTRACTS SELECTED FOR REVIEW

					Increase					
			Original Contract	% of Total Paid	Changed Quantities	Unit Price Letter: Special Provision	Extra Work Orders	Total	% of Total Paid	Total Paid to Contractor
1)	C2901	Island Highway 19	$ 4,669,715	51.7%		$ 4,084,258	$ 272,500	$ 4,356,758	48.3%	$ 9,026,473
2)	C3027	Garibaldi Highway	3,124,396	54.6	$ 1,139,627	1,017,663	445,449	2,602,739	45.4	5,727,135
3)	C1121	Fraser River Crossing Marine Way: Byrne Road - Queensborough Bridge	1,916,914	52.7	741,227	757,405	223,927	1,722,559	47.3	3,639,473
4)	C2656	Fraser River	1,367,125	38.6	392,063	1,607,287	171,022	2,170,372	61.4	3,537,497
5)	53621	Lougheed Highway Highway 7	1,094,051	48.0	595,085	543,427	47,700	1,186,212	52.0	2,280,263
6)	C2662	Floods - Hope	9,879,846	71.0		3,595,757	442,239	4,037,996	29.0	13,917,842
7)	C2871	Hope - Nicolum Creek	15,148,293	58.4	6,134,084	3,799,178	850,784	10,784,046	41.6	25,932,339
8)	B2876	Ladner Creek Bridge	2,405,840	24.4		7,328,652	135,143	7,463,795	75.6	9,869,635
9)	C2812	Box Canyon - Great Bear	6,227,883	35.0	6,528,191	4,384,190	635,418	11,547,799	65.0	17,775,682
10)	B2882	Great Bear Snow Shed	5,524,672	52.6		2,411,617	2,565,400	4,977,017	47.4	10,501,689
11)	C2813	Great Bear No. 5 - Summit	5,794,426	33.1		10,947,050	740,289	11,687,339	66.9	17,481,765
12)	C2694	Mine Creek - Juliet Creek	3,168,430	26.9	2,774,975	1,939,685	3,909,629	8,624,289	73.1	11,792,719
13)	C3936	Revelstoke - Mica	6,985,245	36.1		11,638,655	720,751	12,359,406	63.9	19,344,651
14)	C0748	Bullmoose - Tumbler Ridge West	11,676,278	69.6	19,631	4,677,723	394,907	5,092,261	30.4	16,768,539
15)	C0749	Bullmoose - Tumbler Ridge East	10,747,464	80.5	90,028	1,541,364	974,475	2,605,867	19.5	13,353,331
			$89,730,578	49.6%	$18,414,911	$60,273,911	$12,529,633	$91,218,455	50.4%	$180,949,033

SCHEDULE "B1"

COQUIHALLA AND OTHER RELATED HIGHWAY PROJECTS
DIGEST OF FINDINGS FROM CONTRACTS SELECTED FOR REVIEW

Project #C2901 Vancouver Island Highway-Lantzville to Craig's Crossing
Contract #3739 Road construction

Contract awarded January 2, 1980 to View Construction Ltd.

Original contract	$4,669,715
Increase due to:	
Quantities, unit price letters and special provisions	4,084,258
Extra work orders	272,500
Total payments	$9,026,473

Two major items caused the overrun on this project:

1. Excavation of unsuitable material in excess of that anticipated with a corresponding increase in fill material and the trucking costs associated therewith.

2. Asphalt concrete paving as an addition to the contract cost $1,520,000. Prices were still being negotiated in February 1983 for work done in 1981 and 1982.

SCHEDULE "B2"

Project #C3027 Garibaldi Highway
Contract #4469 Road construction

Contract awarded September 24, 1985 to Graehold Contruction Corp.

Original contract	$3,124,396
Increases due to:	
Quantities	1,139,627
Unit price letters and special provisions	1,017,663
Extra work orders	445,449
Total payments	$5,727,135

The major problems were:

1. Project length increased by 200 metres.
2. Rock face thought to be solid rock was actually found to be dirt after cut was made. Slope had to be stabilized and supported, as well as excavated. Conditions were dangerous and difficult.

The costs on this contract are not yet finalized.

SCHEDULE "B3"

Project #C1121 Byrne Road to Queensborough Bridge (Annacis Crossing)
Contract #3978 Road construction

Contract awarded March 25, 1982 to United Contractors Ltd.

Original contract	$1,916,914
Increase due to:	
Quantities	741,227
Unit price letters and special provisions	757,405
Extra work orders	223,927
Total payments	$3,639,473

The major increase due to quantities was the additional cost to supply, haul, place and compact granular base $396,202.

$402,133 of the unit price letters relate to extra work to stabilize a watermain.

SCHEDULE "B4"

Project #C2656 Grading Queensborough Connector (Annacis Crossing)
Contract #4246 Road construction

Contract awarded June 20, 1984 to Delta Aggregates Ltd.

Original contract	$1,367,125
Increase due to:	
Quantities	392,063
Unit price letters and special provisions	1,607,287
Extra work orders	171,022
Total payments	$3,537,497

The major increase in cost was due to a lack of sand in the Ministry's stockpile and the necessity to truck in sand from other sources.

SCHEDULE "B5"

Project #S3621 Lougheed Highway Reconstruction
Contract #4559 Road paving

Contract awarded May 13, 1986 United Contractors Ltd.

Original contract	$1,094,051
Increase due to:	
Quantities	595,085
Unit price letters and special provisions	543,427
Extra work orders	47,700
Total payments	$2,280,263

The major problem was insufficient information on road base materials necessitating more excavation to remove unsuitable materials and a greater quantity of fill required.

SCHEDULE "B6"

Project #C2662 Trans-Canada Highway Floods to Hope
Contract #4252 Road construction

Contract awarded July 9, 1984 to Goodbrand Construction Ltd.

Original contract	$ 9,879,846
Increase due to:	
Unit price letters and special provisions	3,595,757
Extra work orders	442,239
Total payments	$13,917,842

The contract was delayed due to environmental problems and the relocation of Canadian National Railways main line.

The major cost increase was due to crushing, hauling, and placing granular materials obtained from private sources after it was determined that two designated gravel pits contained unsuitable material.

Funding for this contract was authorized under Vote 74 but expenditures were charged to Vote 69 during 1985/86. This contract was included in the "special warrant authorizations" for Vote 69.

SCHEDULE "B7"

Project #C2871 Hope to Nicolum Creek
Contract #4356 Road construction

Contract awarded February 18, 1985 to Goodb and Construction Ltd.

Original contract	$15,148,293
Increase due to:	
Quantities	6,134,084
Unit price letters and special provisions	3,799,178
Extra work orders	850,784
Total payments	$25,932,339

The major reason for the overrun is the additional cost of roadway and drainage excavation of almost $3.5 million. Additional overhaul costs were incurred as a result of the increase in material excavated. However, while the volume of excavated material increased only 55% the volume of overhaul associated with the excess material increased 559%. Increases in overhaul costs added $2.2 million to the cost of the contract.

Funding for this contract was authorized under Vote 74 but expenditures were charged to Vote 69 during 1985/86. This contract was not included in the "special warrant authorizations" for Vote 69.

SCHEDULE "B8"

Project #B2876 Ladner Creek Bridge (Coquihalla Highway)
Contract #4317 Bridge construction

Contract awarded November 30, 1984 to Wesco Constructing Ltd.

Original contract	$2,405,840
Increase due to:	
Quantities, unit price letters and special provisions	7,328,652
Extra work orders	135,143
Total payments	$9,869,635

By mid December 1984 it was decided to double the length of the bridge. Originally the Ministry advised the contractor that new drawings were not required because they only had to build the original bridge twice. Subsequently it was realized that there was more involved than a double sized bridge. There has been much discussion over the method of paying for this bridge. The first unit price letter was not issued until February 13, 1986 for work done in November - December 1984.

The parties to the contract are currently in litigation.

Progress estimates were falsified in order that the steel supplier could get paid for materials to be supplied.

This contract was authorized and expended under Vote 74 during 1985/86.

SCHEDULE "B9"

Project #C2812 Box Canyon to Great Bear (Coquihalla Highway)
Contract #4295 Road construction

Contract awarded October 10, 1984 to Ledcor Construction Ltd.

Original contract	$ 6,227,883
Increase due to:	
Quantities	6,528,191
Unit price letters and general provisions	4,384,190
Extra work orders	635,418
Total payments	$17,775,682

The increases due to quantities were substantially all rock excavating. Contract estimates were 102,000 cubic metres, actual excavating was 645,669 cubic metres.

In addition the contractor excavated a further 34,467 cubic metres at a debris torrent.

Hauling away the excess excavation and quarrying, crushing, reloading, hauling and placing replacement fill accounted for the balance of the overrun.

This contract was authorized and expended under Vote 74 during 1985/86.

SCHEDULE "B10"

Project #B2882 Great Bear (Coquihalla Highway)
Contract #4414 Construction of snow shed

Contract awarded June 21, 1985 to Kerkhoff Construction Group Ltd.

Original contract	$ 5,524,672
Increase due to:	
Unit price letters and special provisions	2,411,617
Extra work orders	2,565,400
Total payments	$10,501,689

The problems with this project were mainly weather related due to the unavailability of the construction site until two months after the planned date.

Most of the unit prices were increased due to working in difficult conditions.

SCHEDULE "B10"
Continued

The weather also caused extra work in double handling of precast concrete beams and the provision of hoarding and fuel for heating purposes. Snow removal cost approximately $600,000.

The pricing for extra work was not negotiated in advance resulting in delays of payment to the contractor. To compensate for this some progress estimate claims were falsified by Ministry officials. The final progress estimate showed the corrected figures after negotiations were concluded in February 1987.

In an effort to finalize the accounting for this contract and obtain the balance of funds owing by the Ministry, Kerkhoff made an offer to settle, in July 1986, for a figure approximately $1 million less than the total paid by the Ministry.

This contract was authorized and expended under Vote 74 during 1985/86.

SCHEDULE "B11"

Project #C2813 Great Bear to Summit (Coquihalla Highway)
Contract #4278 Road construction

Contract awarded September 4, 1984 to Edgeworth Construction Ltd.

Original contract	$ 5,794,426
Increase due to:	
Quantities, unit price letters and general provisions	10,947,050
Extra work orders	740,289
Total payments	$17,481,765

A lack of suitable borrow materials from designated pits resulted in design changes by the Ministry. These changes increased the costs of excavation of material by $8,853,000. Hauling of material and underground electrical installation also had a major impact on costs.

The majority of extra work was for snow removal $602,500.

This contract was authorized and expended under Vote 74 during 1985/86.

SCHEDULE "B12"

Project #C2694 Mine Creek to Juliet (Coquihalla Highway)
Contract #4263 Road construction

Contract awarded July 31, 1984 to Dawson Construction Ltd.

Original contract	$ 3,168,430
Increase due to:	
Quantities	2,774,975
Unit price letters and special provisions	1,939,685
Extra work orders	3,909,629
Total payments	$11,792,719

The reasons for the large apparent overruns were the additions of two major projects to this contract:

1. Rock excavation, shotcreting and rock bolting for the dry gulch bridge. The Ministry had decided to give this work to the contractor before the contract had been officially awarded.

2. Grading of the road approaching, and on, the toll booth site including installation of electrical equipment.

   Drawings for the laning at and approaching the toll booths were available by February 19, 1985. The work was given to the contractor in the summer of 1985.

This contract was authorized and expended under Vote 74 during 1985/86.

SCHEDULE "B13"

Project #C3936 Revelstoke - Mica Dam
Contract #3712 Road construction

Administered for B.C. Hydro

Contract awarded November 20, 1979 to Edgeworth Construction Ltd.

Original contract	$ 6,985,245
Increase due to:	
Unit price letters and special provisions	11,638,655
Extra work orders	720,751
Total payments	$19,344,651

SCHEDULE "B13"
Continued

The bulk of extra work and increased prices were the result of design change.

Excavation - Borrow used instead of unstable mountain rock, design change required

Overhaul - Road change to avoid unstable rock face

Haul Granular - Change in location of gravel pit

Dowelling - Unstable slope

Mud slide

Due to allegations of faulty design two lawsuits arose.

The contractor suggests that the Ministry should have been aware of unstable rock, due to problems on adjacent project.

SCHEDULE "B14"

Project #C0748 Bullmoose to Tumbler Ridge West
Contract #3924 Road construction

Contract awarded July 23, 1981 to View Construction Ltd.

Original contract	$11,676,278
Increase due to:	
Quantities	19,631
Unit price letters and special provisions	4,677,723
Extra work orders	394,907
Total payments	$16,768,539

The major problems were:

1. A slide that resulted in subsequent relocations of a stretch of the road.

2. Excavation of unsuitable material in 10 km of road in mid section due to high water saturation from sub surface and surface water. After much correspondence regarding soil conditions during the fall and winter of 1982 a preliminary soils survey was obtained on January 24, 1983. It was the contractors opinion that the soils testing should have been carried out prior to the contract being tendered.

   The contractor feels the highway was built on the wrong side of the valley which he says receives no sun and is always wet.

   The Office of the Auditor General found payments for excavation on the progress estimates which were not covered by a unit price letter. This error was not detected by the Financial Services Branch of the Ministry.

SCHEDULE "B15"

Project #C0749 Bullmoose to Tumbler Ridge East
Contract #3924 Road construction

Contract awarded October 30, 1981 to Dawson Construction Ltd.

Original contract	$10,747,464
Increase due to:	
Quantities	90,028
Unit price letters and special provisions	1,541,364
Extra work orders	974,475
Total payments	$13,353,331

The major problems were:

1. Excavation and haul of material found to be unsuitable due to saturation.

2. As a result of unsuitable material new borrow pits further from site had to be identified. These new areas had to be cleared and grubbed and access roads from the pit to the site had to be built. Suitable material was then hauled from these revised sources.

SCHEDULE "C"

COQUIHALLA AND RELATED HIGHWAY
TOTAL COSTS
TO AUGUST 1987

Phase I - from Ministry Brief Schedule "B"		$414,718,454
Phase II - from Ministry Brief Schedule "B"	$135,485,447	
Forecast to complete - Ministry Brief p.32	20,000,000	155,485,447
Phase III - from Ministry Brief Schedule "B"	38,734,853	
Forecast to complete - Ministry Brief p.32	230,000,000	268,734,853
Unclassified as to Phase - from Ministry Brief Schedule "B"		4,877,840
Total "Coquihalla"		843,816,594
Ancillary Projects - expended to August 1987 - from Ministry Brief Schedule "B"	53,396,138	
Trans-Canada Highway Improvements - expended to August 1987 from Ministry Brief Schedule "B"	97,192,005	150,588,143
		$994,404,737

We have not audited the above figures and therefore do not express an opinion thereon.

We note that the above costs do not include a component to cover certain Ministry overhead expenses, eg. senior staff salaries, a portion of which should more properly have been included.

SCHEDULE "D"

COQUIHALLA HIGHWAY PROJECTS
LISTED IN SUMMARY OF EXPENDITURES

AT DECEMBER 31, 1985 BUT NOT INCLUDED
AT FEBRUARY 28, 1986

Project #	Description	Included in 1985/86 Estimates Vote 74	Expended During 1985/86	Included in "Special Warrant Authorizations" Vote 69
B2787	Silverhope Underpass and Floods Underpass	$ 1,300,000	$ 1,630,644	$ 1,840,000
B2790	Tomberry Road Bridge and Silverhope Creek Bridge	200,000	220,174	240,000
B2828	Hope Overpass and Thacker Creek Overpass	2,800,000	2,445,055	2,600,000
B2832	Alexander Bridge	6,700,000	5,466,596	6,200,000
B2880	Silverhope Creek Bridge	2,300,000	2,040,028	2,300,000
B2898	Curnow Bridge	900,000	1,411,297	900,000
B2899	Rattlesnake Bridge		(1,644,574)	1,500,000
B2959	Anderson Creek Bridge		(43,729)	55,000
B3094	Berkey Creek Bridge		(225,238)	300,000
B3112	Vedder Canal Bridge		(141,747)	700,000
C2662	Floods to Hope	7,500,000	10,399,223	9,400,000
C2823	Hwy 5 Junction Douglas Lake		(18,231)	25,000
C2824	Hwy 5 at Nicola Lake		(219,318)	225,000
C2871	Hope - Nicolum Creek	18,500,000	21,147,560	
C2872	Whatcom Interchange		(967,848)	2,253,000
C2873	Popkum Interchange		(1,137,238)	2,253,000
C2874	Hwy 1 and 5 Interchange	3,250,000	5,570,091	5,000,000
C2905	Hwy 5 4-lane construction		(448,520)	453,000
C2906	Wahleach Power Station to Cheam View	9,500,000	11,978,269	10,300,000
C2907	Cheam View to Jones Creek	9,500,000	8,448,307	9,500,000
C2911	Highland Valley Offsite		(1,028,952)	1,080,000
C3344	Meadow Creek Road		(125,000)	125,000
C3413	Upper Nicola Indian Reserve		(31,497)	35,000
C3414	Construct Bus Pullouts		(50,000)	50,000
S2814	Hwy 1 Kamloops	1,900,000	1,733,008	2,225,000
S2815	Upper Nicola - Peter Hope Lake Road	200,000	194,524	200,000
S2920	Logan Lake to Lac le Jeune	1,350,000	1,240,529	1,350,000
S2921	Bethlehem Mine Access Road	1,150,000	1,091,786	1,300,000
S2922	Ashcroft to 26.3 km East	1,600,000	1,805,835	1,750,000
		$68,650,000	$82,904,818	$64,159,000

Projects listed in 1985/86 authorizations Vote 74	$76,822,926
Projects not listed in 1985/86 authorizations Votes 69 nor 74	(6,081,892)
	$82,904,818

SCHEDULE "E"

COQUIHALLA HIGHWAY PROJECTS

CHARGED TO VOTE 74 IN FISCAL YEAR 1985/86

Project #	Description	Included in 1985/86 Treasury Board Request 1/86 Vote 74	Expended During 1985/86 Vote 74
Phase I			
B2789	Nicolum Creek Bridge	$ 4,000,000	$ 5,190,770
B2797	Jessica Bridge	1,400,000	1,634,786
B2818	Dry Gulch Bridge	6,700,000	6,428,264
B2826	Deneau Creek Bridge	100,000	153,814
B2829	Peers Creek Bridge	2,100,000	1,541,454
B2830	Shylock Overpass and Portia Bridge	1,800,000	2,134,285
B2833	Dewdney Creek Bridge	300,000	294,081
B2876	Ladner Creek Bridge	5,200,000	6,478,290
B2879	Juliet Creek and Bottletop Bridges	3,500,000	2,552,747
B2881	Coquihalla Lakes Underpass and Henning Bridge	900,000	891,832
B2882	Great Bear Snow Shed	4,000,000	11,584,907
B2884	Kingsvale Bridge	1,800,000	1,569,531
B2885	Kingsvale Overhead	2,650,000	2,388,907
B2886	Carolin Bridge	1,500,000	1,452,729
B2937	Ottomite Bridge	1,250,000	2,487,329
B2939	Murray, Brook, Brodie Bridges	4,000,000	3,281,045
C0579	Dry Gulch - Mine Creek	100,000	195,857
C0760	Peers Creek - Ten Mile Creek	3,750,000	6,445,161
C2663	Ten Mile Creek - Sowaqua Creek	3,000,000	5,522,872
C2683	Sowaqua Creek - Ladner Creek	3,700,000	7,977,194
C2694	Mine Creek - Juliet Creek	4,250,000	7,194,567
C2781	Aggregates - Coldwater	300,000	85,259
C2782	Aggregates - Shylock	2,000,000	2,624,841
C2810	Portia - Miranda	3,750,000	5,066,289
C2811	Miranda - Box Canyon	5,750,000	8,971,442
C2812	Box Canyon - Great Bear	9,000,000	15,293,447
C2813	Great Bear - Summit	9,000,000	12,769,003
C2825	Juliet Creek - Coldwater	4,000,000	4,713,129
C2827	Crushing Aggregate - Brodie		857,649
C2831	Larson Hill - Coldwater	5,500,000	5,092,814
C2834	Coldwater - Powerline	10,500,000	8,879,512
C2837	Transmountain Pipeline - Merritt	1,700,000	2,013,392
C2838	Merritt Bypass	6,750,000	6,344,399
C2839	Kwinshatin Creek Transmountain Pipeline	7,100,000	7,553,718
C2840	Salem Creek - Glenwalker	5,500,000	4,796,800
C2841	Glenwalker - Kwinshatin	2,200,000	2,506,386
C2843	Compressor Stn - Salem Creek	2,100,000	2,393,881
C2844	Powerline - Compressor	2,000,000	2,506,327
	Subtotal - carried forward	133,150,000	169,868,710

SCHEDULE "E"

Project #	Description	Included in 1985/86 Treasury Board Request 1/86 Vote 74	Expended During 1985/86 Vote 74
	Brought forward	$133,150,000	$169,868,710
C2852	Coldwater - Larson	11,750,000	15,244,913
C2853	Ladner - Shylock	11,000,000	12,171,693
C2854	Shylock - Portia	10,000,000	12,082,757
C2889	Guardrail Purchase	8,000,000	6,973,884
C2896	Provide Power	800,000	628,336
C2917	Avalanche Works	125,000	463,223
C3338	Toll Booth Plaza	1,000,000	2,204,444
S2965	Nicolum Creek - Ladner Creek	3,800,000	2,808,022
S2966	Ladner Creek - Great Bear		1,767,499
S2967	Great Bear - Coldwater		5,324,997
S2968	Coldwater - Glenwalker		4,435,250
S2969	Glenwalker - Nicola Interchange		2,764,928
		179,625,000	236,738,656
Phase II			
B3565	Walloper Underpass		51,241
B3568	Afton Overpass		57,766
B3639	Nicola Farm Bridge		75,736
B3647	Copperhead Underpass		40,043
C2891	Merritt - Shuta Creek	6,600,000	4,763,519
C3071	Aggregates from Kirby		759,766
C3074	Aggregates from Clary		142,873
C3075	Aggregates from Pit 2555		173,292
C3354	Shuta Creek - Kirby Creek		1,311,595
C3355	Kirby Creek to km 16.93		1,498,834
C3356	Km 16.9 to Clapperton		560,816
C3357	Clapperton to Helmer		521,193
C3358	Helmer to Sussex		159,564
C3393	Sussex to Desmond		798,125
C3394	Desmond to Meadow		637,364
C3395	Meadow to Stake		101,422
C3396	Aggregates from Timber		128,671
C3415	Godey Reconstruct		39,997
C3416	Stake to Peterson		661,768
C3417	Peterson to Rush		255,821
C3527	Clapperton to Sussex		321,864
C3528	Sussex to Meadow		377,796
	Subtotal - carried forward	6,600,000	13,439,066

SCHEDULE "E"

Project #	Description	Included in 1985/86 Treasury Board Request 1/86 Vote 74	Expended During 1985/86 Vote 74
	Subtotal - carried forward	$ 6,600,000	$ 13,439,066
C3529	Meadow to Stake		217,318
C3530	Stake to Rush		260,137
C3558	Rush to Moose		905,514
C3559	Moose to Highway 1		722,992
		6,600,000	15,545,027
Phase III			
C3533	Tote Road		175,059
C3689	Tote Road		630,402
C3730	Loon Lake Improvement		99,976
		Nil	905,437
Total - Phase I, II, III		186,225,000	253,189,120
	Less total authorized		186,225,000
	Total spending in excess of authorization		$ 66,964,120

APPENDIX F

A MEMBER OF ARTHUR YOUNG INTERNATIONAL

Clarkson Gordon

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October 23, 1987

Mr. Douglas L. MacKay
Commissioner
333 Quebec Street
Victoria, B.C.

Dear Mr. MacKay:

You have asked us to assist in the Inquiry approved and ordered by the Lieutenant Governor in Council on July 31, 1987. Specifically, and to which this letter pertains, you have asked for our comments relative to provisions in the Order calling for your examination of standards, practices and procedures of the Ministry of Transportation and Highways so as to assist in developing your recommendations.

The basis for our comments derive from the following:

i) Meeting with you and Mr. E. Henderson to discuss your mandate, the scope of the work and our role in assisting you;

ii) Reviewing certain background material, in particular the "Brief to Commissioner Inquiry Coquihalla and Related Highway Projects - September, 1987" and a draft report on "Contract Administration - Ministry of Transportation and Highways" - June 1987, prepared by Internal Audit, Office of the Comptroller General;

iii) Liaison with our partner, Mr. David Hooper, on his review on your behalf of details pertaining to the Coquihalla and other construction projects; and

iv) Meeting with you and the Deputy Minister of Transportation and Highways.

General Observations

It appears that opportunities exist for strengthening the organizational structure, systems and practices of the Ministry. Systems and practices in place have apparently served the organization well in the past, at a time when there was little turn-over of senior personnel and while

construction activity remained relatively constant from year to year. With the rapid escalation of construction during the past few years, brought on to a significant extent by the Coquihalla and Annacis projects, the frailty of systems and practices became evident. More recently there have been a number of retirements at the senior management levels representing a very significant number of man years of service within the Ministry, with certain positions still being vacant. With this loss of senior personnel, the Ministry has lost a considerable amount of depth of knowledge of the Ministry's operations and resident ability to work with systems in place.

Potential Areas for Improvement

Following are the specific areas where opportunities for improvement appear to exist.

1. Re-definition of Departments and Departmental roles.

At the moment there are four departments:

- Administration and Services
- Highway Operations
- Transportation Policy
- Motor Vehicle

The Highway Operations Department accounts for approximately 60% (4,000) of the Ministry's total staff numbering 6,750. The Department is responsible for construction, engineering and maintenance and is so overwhelming in size relative to the other departments that it causes an imbalance within the Ministry. The scope of responsibilities assigned to the Assistant Deputy Minister, who happens to be new in his job, appears too broad. A review of the various mandates of the Ministry and a re-definition of the role of each of the existing departments seems to be in order.

Over past years the role of the financial function may not have taken on the level of importance that it deserved or that was required to properly plan and control the financial affairs of the Ministry. Indeed, this may have come about in part because of the overwhelming size and perceived importance of the Highway Operations Department and in part by a lack of understanding of the respective responsibilities of the financial administrator and operational management. History, it appears, would dictate that the role of the financial function now be re-defined. As part of this re-definition it may be important to raise the perception of finance within the Ministry. Enhanced perception might be accomplished, in part, as simply as changing the name of the "Administration and Services Department" to "Finance and Administration Department".

Clarkson Gordon

2. Examine Ways to Enhance Co-ordination at all Levels

Presently there is an Executive Committee in place comprised of the Deputy Minister and the four Assistant Deputy Ministers. The scope of activities and overview of this Committee are expanding which appears to be a good thing.

In addition to the communication within the Executive Committee there appears to be a need for interaction at other levels within the organization also; not only between departments at Headquarters but with Regional offices and Headquarters. While some attempts have been made in the past to cause this to happen, there may be need for greater formality to provide the necessary discipline. This interaction should extend to project management in the field, management in the construction group in Headquarters and financial services with the view to ensuring that management personnel have an understanding of the various inter-relationships and that policies and procedures are carred out appropriately and consistently.

There may also be need for improved liaison by the Ministry with Treasury Board and with the Ministry of Finance to ensure that all the checks and balances that need to be in place are in fact operating satisfactorily.

3. Evaluate Personnel Practices

Low staff turn-over in past years appears to have resulted in less attention having been paid to effective human resource management than might otherwise have been the case. Recent retirements and their impact on the organization have now caused management to focus on this very critical area.

The matter of succession planning, training at all levels in the organization and performance evaluation practices are matters that seem to require review to ensure that acceptable standards are in place. Position descriptions and remuneration practice may also require review to assist in recruiting efforts and to ensure appropriate linkage with the performance evaluation systems.

4. Re-definition/Confirmation of the Decision-making and Approval Processes

Decision-making and approval processes appear to be not well enunciated and/or understood. Approvals are given in some instances by persons not having the appropriate authority; at times approvals are given after work is completed. As it pertains to construction projects, there appear to be instances in which decisions are taken without all information being assembled or without relevant people being consulted. That is not to say that, at times, circumstances require the formal decision-making process to be by-passed; but lack of a clear understanding has caused these formal processes to become fragmented.

A re-definition of the decision-making process throughout the organization in conjunction with an up-dating of position descriptions referred to earlier would help to determine the level of centralization or decentralization appropriate for management currently in place at Headquarters and in the Regions and would identify and/or confirm appropriate linkages within the Ministry.

5. Evaluate Policies and Procedures

The Ministry maintains Policy and Procedure Manuals intended for guidance to staff. However, we were unable to determine how up-to-date these are or how well they are understood. Furthermore, there appear to be inconsistencies between certain of these policies and procedures and the "Ministry of Transportation and Highways Act".

In order for personnel to carry out their jobs effectively and efficiently, they need to have a clear understanding of the benchmarks that govern the organization. Furthermore, documented policies and procedures should set out clearly the decision-making and approval processes within the Ministry and should serve as a tool for staff training purposes.

6. Review Need for Internal Audit Function within the Ministry

Events which have overcome the Ministry in recent months obviously raise the question as to the effectiveness of the system of internal checks and balances in field operations, Headquarter operations and the finance function. Opportunities for improving these systems have been referred to above. In addition to, and not as a substitute for sound management practices and a system of internal check, the role of internal audit can be an effective and powerful management and operational device. It is lacking within the Ministry; furthermore, it appears that the Ministry has not availed itself of internal audit service on a regular basis from outside suppliers or from the Office of the Comptroller General. Also, it has not been a candidate for such review on a routine basis by other agencies within Government (the June 1987 review referred to on page 1 of this letter is the first such review in ten years, we are told).

7. Review Management Reporting System

The Ministry is a major entity in which management at all levels requires timely, accurate and relevant information in order to carry out its responsibilities. Furthermore, reporting systems must be responsive to the organizational structure in place and the management style of the people that make up that structure. Recent changes at the senior management levels would normally, in themselves, cause one to re-examine the appropriateness of reporting systems. More importantly though, there will need to be an extensive evaluation of these systems if departments and their roles are re-defined as commented on above and if modifications are made in the decision-making and approval processes.

Clarkson Gordon

The above comments describe briefly those areas in which it appears improvements might be made in the Ministry's structure, systems and practices. We have not focused attention on those areas which are functioning effectively, nor was it our mandate to do so. We are told that senior management is already addressing many of the points we have raised; some with their own resources and some with the help of outside consultants. If a decision is taken to address all of the above opportunities, we would anticipate that corrective action can be accomplished on most, if not all within six to eight months of commencement.

There is no simple solution to accomplish organizational change. The human factor is a key determinant in the rate at which change takes place, the degree to which desired change is accomplished and the level at which it is ultimately maintained. Many of the points raised above are interrelated. Accordingly, the improvement program must integrate a variety of components, must be carefully planned and must provide for a disciplined and objective mechanism in order for the desired results to be accomplished.

We trust these comments will be of use to you. If you require further elaboration on them please feel free to contact us. We appreciate the opportunity to be of service to you in this important undertaking.

Yours truly,

Henry J. Pankratz/dh

APPENDIX G-1

INFORMATION SUPPLIED BY MINISTRY

IN RESPONSE TO COMMISSION REQUESTS

August 14, 1987

- Tabulation of tenders for Coquihalla Phases I, II and III and the Ancillary Program.

- Final progress payment report for Coquihalla Phase I and the Ancillary Program (final quantities are shown).

- Organization chart for the Coquihalla Project.

- List of Contractors (by contract).

- Listing of every contract over $500,000, million showing the contract amount vs. the total expenditure.

- Listing of work done by Ministry's own forces or selected outside.

- Description of Ministry's reporting system for costs during construction.

- List of the prime design consultants.

August 17, 1987

- Sections of the Ministry Policy and Procedures Manual which outline the formal and informal tendering process.

- Standard forms included in contract documents when advertised.

- Flow chart of the awarding procedure, and a sample copy of a Treasury Board Approval letter.

- Final progress payment reports for the bridge and paving contracts.

August 19, 1987

- Summary of the Special Warrants for the 1983/84 to 1986/87 fiscal periods.

- Treasury Board letters and budget confirmation letters for 1984/85 to 1987/88 fiscal years.

- Summary of the clearing and grubbing, grading, and crushing contracts for Phase I. Showing original bid prices, engineering, material and miscellaneous costs, and the final costs.

- Revised Coquihalla Highway Phase I, II and II Contract Report.

- Flow chart illustrating the Highway Capital Works Process with a written explanation of each step.

- Cost Estimate - Coquihalla Phase III

- Tabulation of work not done by contract

August 21, 1987
- Tabulation of tenders for the Revelstoke/Mica project (grading, bridge and paving).

- Final progress payments for the above.

- Summary of the Phase I estimated and actual paving expenditures.

- List of the amount of highway capital expenditures for the last 20 years.

- Table showing the division of the budget between capital and maintenance for the last 20 years.

- Key plan for the Ancillary program on the Trans-Canada Highway.

September 3, 1987
- Summary of the prime design consultants and the geotechnical consultants.

- Latest progress estimates available for grading, clearing and grubbing, aggregate preparation and paving for Coquihalla Phase II.

- Contract Documents for C-2840 Construction: Salem Creek to Glenwalker.

- Ministry of Transportation and Highways Annual Report 1985-1986.

September 10, 1987
- Active Contract Status Report as of September 10, 1987.

- Listing of Project Contract File, September 10, 1987.

October 1, 1987
- Technical assessments of the required remedial work for the Great Bear Snowshed.

- Highway Construction Index 1976 to 1985.

- Estimates for the Annacis System.

- Highway Capital Program 1986/87, 1987/88 and 1984 to 1988, 1985 to 1989.

- Chronology of the Coquihalla Highway Project.
- Squamish Highway Projects (before and after costs with explanatory notes).
- Coquihalla Highway organizational charts (with names).
- Northeast Coal Highway Project - Feasibility Study and cost estimates (monthly).
- Highway Board minutes (selected).
- Ministry Press releases (selected).

October 5, 1987
- A report on "Vancouver - Squamish Corridor Study".
- Files (15) containing cost estimate summaries for each project on the Squamish Highway.
- Cost information on Ministry contracts over $1 million.
- Hansard references for the Northeast Coal, Squamish and Annacis Bridge projects.

October 13, 1987
- Information regarding extreme value overpayments (tender to total paid) for specific Bridge and Paving contracts.

November 10, 1987
Annacis project:
Estimate-Expenditure Comparisons for: Design and Geotechnical, Investigations, Bridge Construction, Road Construction, Right-of-Way and Total.

December 2, 1987
- Reconnaissance estimate, October 1976, for Northeast Coal Project.
- Work done since May 16, 1986 on the Coquihalla Highway Phase 1, maintenance, completion and aesthetics, totalling $4,030,000.

APPENDIX G-2

INFORMATION REQUESTS SENT TO MINISTRY BY COMMISSION

1. All Coquihalla contracts with a plan showing location.

2. Tabulation of Tenders for each contract along with advertisement.

3. Final quantities and costs for each contract including extra work i.e. other than bid units.

4. Tabulation of work not done by contract i.e. own forces or selected outside.

5. Summary of above to show final total cost, etc.

6. History chronology re: Coquihalla i.e. reports, memos, etc., including estimates.

7. Formal approvals received for overall project including submissions, reports, and estimates.

8. Ministry of Transportation and Highways organization chart.

9. Organization chart for management of Coquihalla.

10. Description of system for project approval.

11. Description of system for contract award including information required to accompany submissions.

12. Description of reporting systems for costs during construction.

13. Summary of each highway project in excess of $1/2 million in last four years including companies with bid prices and estimates.

14. Capital expenditure by years - last 20 years.

15. Overall Ministry Budget by years - last 20 years.

16. Name of each contractor (with contact and phone number) employed by the Ministry on the Coquihalla project.

17. Name of each prime consultant (with contact name and phone number) employed by the Ministry on the Coquihalla project.

18. News Releases and if applicable, other public announcements made respecting the Coquihalla project.

19. The Ministry's capital budgeting process and a comparison with processes followed in Alberta, Washington State and California.

20. A comparison of the Coquihalla project timetable as initially planned compared with the "fast-track" timetable, and the differences in design, survey and construction activities between the two.

21. The manner in which the Ministry ascertains and manages inflation in general construction costs in its estimating and budgeting procedures.

22. Copies of Technical Assessments or other reports relating to the additional work done following the conclusion of contracts on the Coquihalla project i.e. re-paving south of the Great Bear Snowshed, work on the Great Bear Snowshed itself, and foundation stabilization at the Dry Gulch Bridge.

23. An outline of any other contracts which the Ministry anticipates may be required in the next two years on Phases I and II of the Coquihalla project.

24. We require further, more detailed documentation in relation to some of the Unit Price Letters. We realize this may include correspondence from the Project Supervisor, Branch Manager and Contractor. We are initially requesting copies of documents in support of the following five U.P Letters:

Project	U.P.L.	Authorization Date
C-2663	*5	February 26, 1985
C-2810	*5	April 29, 1986
C-2852	*5	November 27, 1985
C-2854	*13	July 31, 1986
C-2891	*2	July 4, 1985

25. All the Ministry contracts, invoices, and payments made for the supply of helicopter services relating to the survey, design, and construction of the Coquihalla Highway.

26. A listing of the Coquihalla contracts not yet finalized, i.e. with unresolved claims outstanding.

26. A tabulation of all contracts over the past seven years over $ 1 million by type, listing the differences between the total paid and total bid, and the number and amount of extra work orders. Attached is a page of the Ministry's Financial Services computer-listing showing the data file from which this request may be sourced. We would also like to include unit price letters in this information so that we can evaluate contract changes in total and would be pleased to discuss how this information could be added to the tabulation.

27. The trends in costs and value of the dollar as reflected in the Canada Price Index (B.C.), the Construction Index (B.C.) and the prices received by the Ministry in bids from contractors.

28. A description of the process of compilation and distribution of the Monthly Project Cost reports.

29. A general outline of the procedures within the Ministry for the preparation of the annual Budget, Press Releases, and Annual Reports.

30. Further to Appendix E of the Ministry Brief to the Inquiry, a tabulation on a fiscal year basis of the authorized expenditures by their specific sources, as compared with the actual expenditures by Project Number, together with the location in the relevant Annual Report in which this information is published. A pro forma table is attached as a guide.

31. A listing of all TB-200 requests and authorizations affecting the Ministry's Capital Budget since FY 1984/85.

32. An explanation of Bill 5 (1978/9) and Bill 7 (1980/81) referenced in the Ministry's tabulation of Capital Expenditure 1967/8 to 1987/8.

33. The Ministry's annual Capital Works Programs as approved for the years 1980/81 to 1986/7.

34. The 1973 report on the Coquihalla Route prepared by Mr. A. Mantel.

35. Documentation of Design and Surveys Branch (or other Branches) respecting Hope-Merritt costs 1977/78 with up-dates as prepared for 1982 and 1984 estimates.

36. Documentation of Planning Branch (or other Branches) respecting Coquihalla project, as prepared for/supplied to Minister prior to May 1984.

37. The preliminary design estimates and supporting rationale for the Coquihalla Merritt-Kamloops and Merritt-Peachland projects.

38. Preliminary design and other estimates for the Northeast Coal access highway, Annacis Bridge, and Squamish Highway projects. Particular reference should be made to reconciling the costs and scope of the Annacis project with the information provided in Appendix D of the Ministry Brief.

39. Press Releases and Hansard references for the projects listed in Request 38.

40. Highways' Board minutes relating to the Coquihalla project and the projects listed in Request 38, as offered by Mr. Clancy at our meeting with Mr. Rhodes in your offices.

41. Monthly summaries prepared during construction of the Annacis and Coquihalla projects, showing the cumulative amounts spent on each project, as mentioned in our meeting with Mr. Rhodes.

42. Background information and submissions relating to the Coquihalla Highway Construction Acceleration Act.

43. An extension of the listing of recently retired employees to include other key directors and managers involved in project planning, design, construction and accounting.

44. Duplicates of the Coquihalla design and construction organization charts which show the names of the staff identified by job-title.

45. Do W.C.P.A.'s exist for Bridge projects?

46. The number of km of Phase I and Phase II Coquihalla located within the Yale-Lillooet electoral district.

47. The attached sheets list tender prices and final payments for what we believe to be a representative group of "normal" C, S & B contracts over $1 million taken from the information you have supplied to us. We would appreciate if you could have entered opposite each contract the Ministry's estimate for that contract prepared at the time of tendering. We would also appreciate if you would examine the lists and advise, with reasons, if any of the contracts we have included are in your opinion, inappropriate to be used for the purpose outlined above.

48. We have tabulated the B, C, and S contracts. We need information on extreme value overpayments - tender to total paid for the following contracts:

    B 1102 - total paid was 25% more than tender
    B 2341 - total paid was 21% more than tender
    S 1705 - total paid was 39% more than tender
    S 1824 - total paid was 96% more than tender
    S 2912 - total paid was 47% more than tender
    S 8812 - total paid was 93% more than tender

49. Could the estimate made for the cost of the North East Coal access road be confirmed in writing.

50. Could a listing of the work done on the Hope-Merritt part of the Coquihalla Highway since its opening be provided, with a brief note of the work's purpose, necessity, and cost.

APPENDIX H-1

Province of British Columbia
OFFICE OF THE MINISTER

Ministry of Transportation and Highways

Parliament Buildings
Victoria
British Columbia
V8V 1X4

Ministers phone:
387-3180 or 387-3181
Executive Assistants
387-6046 or 387-6709

APR 15 1985

RECEIVED
APR 16 1985
TREASURY BOARD STAFF
VICTORIA, B.C.

The Honourable Hugh A. Curtis
Chairman
Treasury Board
Parliament Buildings
Victoria, British Columbia

Request: No. 1/86

Date: April 1, 1985

Votes: Vote 69 Highway Operations Department
Vote 70 Motor Vehicle Department
Vote 72 Transportation Policy Department
Vote 74 Economic Renewal - Special Highway Capital Construction Projects

Re: Call and Award of Contracts - 1985/86

REQUEST: In order to plan and schedule an orderly flow of contracts to carry out the Ministry Programs throughout fiscal year 1985/86, the Ministry is requesting authorization, on a blanket basis, to call and award the construction/maintenance contracts outlined below and further detailed in the attached schedule.

1. 69 Highway Operations Department

   a) 69 Highway Maintenance Program - sundry maintenance contracts — $ 15,000,000

   b) 69 Highway Capital Maintenance — 84,739,000
   The attached schedule of projects outlines the amounts available for day labour, minor betterments, forest access roads, fencing program, ferry landing repairs, ferry refits and repairs, and paving recap projects.

   c) 69 Highway Capital Construction — 104,637,000
   The attached schedule also outlines those capital projects that are continuing or new under the Ministry's general Highway Capital Construction program.

   The approval of this schedule is with the distinct understanding that expenditures will be controlled to stay within the funding provided in the budget.

2. 70 Motor Vehicle Department - Weigh Scale contracts — 250,000
   Miscellaneous maintenance and modification contracts.

3. 72 Transportation Policy Department - Airport Assistance — 200,000
   contracts for the extension and/or paving of local airports.

4. 74 Economic Renewal - Special Highway Capital Construction Projects — 479,698,000

The attached schedule also outlines those capital projects and contracts that are continuing or new under the Economic Renewal projects - Fraser River Crossing (Annacis) and Coquihalla Highway. The amount indicated of $479,698,000 is considered to be the minimum requirement if these two major projects are to remain on schedule. The additional funding of $23 million will be requested later via a Special Warrant. The additional sum of $23 million is primarily due to reduction in expenditure progress in 84/85 and not that overall costs are increased.

The programs outlined above, in addition to those specifically identified projects, will require a series of operational construction/maintenance contracts as detailed below:

(1) Gravel Crushing, Asphalt Mix Projects and Gravelling:
Approximately 60-70 contracts at various locations ranging from $50,000 to $200,000.

(2) Paving Recap, Patching, Curb and Gutter, and Road Seal Contracts:
Approximately 55-60 paving recap, road seal, and curb and gutter contracts throughout the Province, ranging from $10,000 to $3,000,000.

(3) Fencing Projects:
Approximately 20-25 fencing contracts ranging from $3,000 to $50,000 throughout the Province to maintain stock control on the highway.

(4) Road Construction, Drilling, Blasting, Hauling, Grading and Related Works:
Approximately 45-55 miscellaneous road improvements and maintenance type contracts ranging from $3,000 to $200,000.

(5) Bridge and Ferry Landings and other Engineering Structures:
Approximately 35-40 contracts at various locations covering:
- Repairs/improvements to weigh scales including weighing mechanism.
- Construction of bridges and ferry landings.
- Repairs and modifications to bridges and ferry landings.
- Cleaning and painting of bridges, tunnels, weigh scales.
- Mechanical repair of bridges, swing spans, tunnels.

These projects range from $3,000 to $400,000.

(6) Landscaping and Roadside Development Projects:
Approximately 25-30 contracts at various locations covering:
- Maintenance of roadside areas and medians including garbage pickup.
- Site preparation and development of Tourist Information Centres.
- Landscaping roadside rest areas.
- Services to washroom building facilities, etc. for roadside rest areas.
- Landscaping of highway construction areas in urban areas of high public profile.
- Expo 86 display development on roadside areas.

These projects range from $2,000 to $200,000.

(7) Ferries:
Approximately 10-15 contracts for various ferries to cover:
- Mechanical repairs to motors and equipment.
- Minor and major refits as required including damage repairs.
- Mechanical repairs and modifications to aerial ferries.
- Installation of new equipment, new motors.
- Modifications to ferries as required.

These projects range from $1,000 to $1,000,000.

(8) Traffic Control:
Approximately 40-50 contracts for flagging and the control of traffic. Contracts range from $500 to $100,000.

(9) Airport Paving:
Under the Air Transport Assistance Program, a few airports may be paved under direct contract with the Ministry and where possible in conjunction with highway paving work. These may range from $40,000 to $200,000.

(10) Weigh Scales:
Under the Motor Vehicle Department Vote, approximately 20-30 contracts may be required to make repairs, modifications, improvements, electrical repairs, electronic repairs, painting, sign repairs, etc., to the weigh scales located throughout the Province.

(11) Highways Electrical Projects - Street Lighting, Traffic Signals, Channelization:
Approximately 55-60 projects at various locations throughout the Province covering the installation and upgrading of street lighting and traffic signals plus channelization. These projects range from $10,000 to $200,000.

All these contracts are within the Estimates and are generally associated with other contracts or programs in progress.

JUSTIFICATION: In order to organize the number of contracts involved and call and award on an orderly basis and create as smooth an economic flow of work as possible, it is necessary to call and award contracts on a strict schedule to maximize the use of our own limited resources as well as the resources of the construction industry. The approval of these contracts is with the distinct understanding that Treasury Board may withhold the specific calling and awarding of certain contracts at a later date and that the Ministry will maintain budgetary control to the level desired by Treasury Board should a change in priorities be necessary.

The approval of this package will eliminate the need for many individual submissions throughout the year.

Minister of Transportation and Highways

Chairman, Treasury Board

Approved AS IN MY LETTER. Dated: MAY 16 85

Contact:
A.E. Rhodes
Acting Deputy Minister
Telephone 387-3280

cc D.M. Hyndman
Deputy Secretary
Treasury Board

SUMMARY - HIGHWAY CAPITAL PROGRAM 1985/86 ($1,000s')

April 1/85
#2927F

	Continuing	New	Total	Approved Estimates
Highway Capital Maintenance				
Day Labour Roads	$ 22,609	$ -	$ 22,609	$
Minor Betterments Roads	12,000	-	12,000	
Forest Access Roads	500	-	500	
Fencing Program	1,500	-	1,500	
Day Labour Bridges	5,235	-	5,235	
Ferry Landings	-	2,000	2,000	
Ferries - Refits & Repairs	2,009	-	2,009	
Paving Recap & Improvements	19,986	18,900	38,886	
	63,839	20,900	84,739	86,564
Highway Capital Construction				
Landscaping	2,000	-	2,000	
New Equipment Purchases - Mach. & Equip.	1,000	-	1,000	
Avalanche Control Projects	50	-	50	
Guardrail Installation	1,500	-	1,500	
Communications Equipment	500	-	500	
Scientific & Technical Equipment	780	-	780	
ad Construction Projects	(19,653)	9,000	28,653	
Bridge Construction Projects	13,795	12,750	26,545	
Ferries	-	-	-	
Paving	-	1,350	1,350	
Planning & Engineering	29,183	-	29,183	
Property Acquisition - General	10,053	-	10,053	
Municipal Programs	3,023	-	3,023	
	81,537	23,100	104,637	106,072
Hydro Development - Highways				
Roads	500		500	
Bridges	524		524	
Recoveries from Hydro	(1,024)		(1,024)	
	nil		nil	
Total Highway Operations	145,376	44,000	189,376	
Economic Renewal - Special Highway Capital Construction Projects				
Coquihalla Highway				
Roads	194,082	7,040	201,122	
Bridges	57,430	-	57,430	
- Paving	10,000	7,700	17,700	
- Planning & Engineering	7,319	-	7,319	
- Property Acquisition	5,000	-	5,000	
	273,831	14,740	288,571	281,073
Fraser River Crossing - Annacis				
- Roads	15,155	69,200	84,355	
- Bridges	86,735	5,535	92,270	
- Paving	-	2,748	2,748	
- Planning & Engineering	3,754	-	3,754	
- Property Acquisition	8,000	-	8,000	
	113,644	77,483	191,127	174,982
Total Economic Renewal Special Projects	387,475	92,223	479,698	456,055
TOTALS ALL CAPITAL PROGRAMS	$532,851	$136,223	$669,074	$648,691

APPENDIX H-2

Province of British Columbia
OFFICE OF THE MINISTER

Ministry of Transportation and Highways

Parliament Buildings
Victoria
British Columbia
V8V 1X4

Minister's phone: 387-3180 or 387-3181
Executive Assistants 387-6046 or 387-6709

JUL 22 1986

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TREASURY BOARD STAFF
VICTORIA B.C.

The Honourable Hugh A. Curtis
Chairman
Treasury Board
Parliament Buildings
Victoria, B.C.

Request: No. 8/86

Vote: 69 Highway Operations Department
74 Economic Renewal

Date: July 15, 1985

Amount: $ 86.0 million - Vote 69
70.0 " - Vote 74
$156.0 million

Re: Supplementary Highway Capital Construction Program

REQUEST: May the Ministry receive authority to call and award contracts and carry out day labour works totalling $156.0 million as detailed below:

Vote 69		
Road Construction	$14.0 million	
N.E. Coal Related	9.5 "	
Bridge Projects	5.4 "	
New Paving	6.6 "	
Day Labour - Construction	18.5 "	
Recap Paving	12.0 "	$66.0 million
Right-of-Way Acquisition		15.0 "
Hwy. 99 Horseshoe Bay-Squamish		5.0 "
		$86.0 million
Vote 74		
Coquihalla Hwy. Phase 1 - current shortfall	$ 7.0 million	
Coquihalla Hwy. - Phase 2	20.0 "	
Coquihalla Hwy. - Merritt-Peachland	10.0 "	
Hwy. 1 - Chilliwack conversion to Freeway	5.0 "	$42.0 million
Fraser River Crossing - current shortfall	16.0 million	
Fraser River Crossing - Acceleration	12.0 "	28.0 "
		$70.0 million

See attached for details of projects involved.

If approved, special warrants will be required later in the fiscal year.

JUSTIFICATION: The projects planned are considered to be of the highest priority as outlined at a recent meeting between staffs of the Ministry of Finance, this Ministry and the Office of the Premier. Coupled with the

current highway construction now in progress, the overall program will represent a significant and desirable level of economic activity on highway construction. This program will stimulate the economy and create employment equal to 3120 man years.

The additional expenditures on the Fraser River Crossing (Annacis) will accelerate the completion by two months, thereby making this facility available to the public during the peak 1986 tourist season. Other additional expenditures on the Coquihalla Highway will accelerate the completion of the Merritt-Kamloops section and obtain an earlier start on the Merritt-Peachland section.

Minister of Transportation and Highways

Not/Approved

Contact:
A.E. Rhodes
Acting Deputy Minister
Telephone: 387-3280

cc D.M. Hyndman
Deputy Secretary
Treasury Board

Chairman, Treasury Board

Dated: _____

APPENDIX H-3

Province of British Columbia
OFFICE OF THE MINISTER

Ministry of Transportation and Highways

Parliament Buildings
Victoria
British Columbia
V8V 1X4

Minister's phone
38 [illegible]0 or 387-3181
Executive Assistants
387-6046 or 387-6709

AUG 8 1985

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TREASURY BOARD STAFF
VICTORIA, B.C.

The Honourable Hugh A. Curtis
Chairman
Treasury Board
Parliament Buildings
Victoria, B.C.

Request: No. 9/86

Vote: 69 Highway Operations Department
74 Economic Renewal

Date: August 2, 1985

Amount: $ 58.8 million - Vote 69
70.0 " - Vote 74
$128.8 million

Re: Supplementary Highway Capital Construction Program

REQUEST: Further to our Treasury Board submission 8/86, the Ministry, after further review with the Honourable Premier and Treasury Board, wish to cancel the requests in 8/86 and request authority to call and award contracts and carry out day labour works totalling $128.8 million as detailed below:

Vote 69		
Road Construction	$7.0 million	
N.E. Coal Related	6.5 "	
Bridge Projects	1.5 "	
New Paving	1.3 "	
Day Labour - Construction	18.5 "	
Recap Paving	4.0 "	$38.8 million
Right-of-Way Acquisition		15.0 "
Hwy. 99 Horseshoe Bay-Squamish		5.0 "
		$58.8 million
Vote 74		
Coquihalla Hwy. Phase 1 - current shortfall	$ 7.0 million	
Coquihalla Hwy. - Phase 2	20.0 "	
Coquihalla Hwy. - Merritt-Peachland	10.0 "	
Hwy. 1 - Chilliwack conversion to Freeway	5.0 "	$42.0 million
Fraser River Crossing - current shortfall	16.0 million	
Fraser River Crossing - Acceleration	12.0 "	28.0 "
		$70.0 million

See attached for details of projects involved.

If approved, special warrants will be required later in the fiscal year.

JUSTIFICATION: The projects planned are considered to be of the highest priority as outlined at a recent meeting between staffs of the Ministry of Finance, this Ministry and the Office of the Premier. Coupled with the current highway construction now in progress, the overall program will represent a significant and desirable level of economic activity on highway construction. This program will stimulate the economy and create employment equal to 2576 man years.

The additional expenditures on the Fraser River Crossing (Annacis) will accelerate the completion by two months, thereby making this facility available to the public during the peak 1986 tourist season. Other additional expenditures on the Coquihalla Highway will accelerate the completion of the Merritt-Kamloops section and obtain an earlier start on the Merritt-Peachland section.

Minister of Transportation and Highways

~~Not/Approved~~ SEE LETTER.

Chairman, Treasury Board

Dated: SEPT 23 85

Contact:
A.E. Rhodes
Acting Deputy Minister
Telephone: 387-3280

cc D.M. Hyndman
Deputy Secretary
Treasury Board

Province of
British Columbia

Ministry of
Finance

TREASURY BOARD STAFF

Parliament Buildings
Victoria
British Columbia

TREASURY BOARD BRIEFING NOTE

I. Prepared for circulation to the members of Treasury Board.

II. Ministry of Transportation and Highways
Request No. 9/86
Vote No. 69 and 74
Amount: $128,800,000
Subject: Supplementary Highway Capital Construction Program

III. Background:

The ministry is requesting approval to increase its Highway Capital Construction and Capital Maintenance program by $128.8 million, as summarized below:

Table 1 1985/86 Capital Construction and Capital Maintenance Budget

	Approved	Requested	Total
	(millions)		
Vote 69: Highway Operations			
Capital maintenance	$ 86.6	$ 22.5	$109.1
Capital construction	106.1	36.3	142.4
Sub Total	192.7	58.8	251.5
Vote 74: Special Accelerated Projects			
Coquihalla	281.1	42.0	323.1
Annacis	175.0	28.0	203.0
Sub Total	456.1	70.0	526.1
TOTAL	$648.8	$128.8	$777.6

The ministry notes that 2,576 man years of employment will be created.

IV. Discussion:

If these expenditures are approved, the ministry's 1985/86 capital budget would increase by 20% to $777.6 million, and its 1985/86 total budget would increase by 12% to $1.2

billion. Since there is no provision in the 1985/86 Estimates for the proposed supplementary highway capital construction program, a special warrant would be required later in the 1985/86 fiscal year for up to $128.8 million.

A number of project in-service dates will be advanced by this program. The Fraser River Crossing at Annacis will be completed by June 30, 1986, instead of by the end of that summer. Both phases 2 and 3 of the Coquihalla Highway Project will be advanced, and the schedule for Highway 99 will be assured.

Of the $128.8 million requested, $23 million represents the unspent portion of a special warrant approved in 1984/85 for accelerated highway projects. The ministry proposes to complete this work in 1985/86. A further $38.8 million is for a number of smaller projects, including $18.5 for day labour throughout the province.

Both the list of smaller projects and the accelerated in-service dates represent decisions taken by the Premier's Office. These decisions were made after finalization of the 1985/86 budget.

The ministry notes that if it receives approval for the 650 additional FTEs it has currently requested from Treasury Board, no further FTEs will be required to complete the enhanced program.

V. Options:

1. Do not approve the additional expenditure.

2. Approve the additional expenditure.

VI. Recommendation:

Option 2. A draft decision letter is attached for consideration.

August 22, 1985

APPENDIX H-4

Province of
British Columbia

Ministry of
Finance

Treasury Board
Parliament Buildings
Victoria
British Columbia
V8V 1X4

Approved Dept 23/85

September 23, 1985

Personal and Confidential

Honourable Alex V. Fraser
Minister of Transportation
and Highways
Parliament Buildings

My dear Colleague:

Subject: Ministry of Transportation and Highways, Request No. 9/86, Supplementary Highway Capital Construction Program

The Ministry of Transportation and Highways' Request No. 9/86 to spend $128,800,000 on supplementary highway capital construction projects has been approved by Treasury Board.

Since there is no provision in the 1985/86 Estimates for this expenditure, the ministry should bring forward a request for a special warrant later in the fiscal year once it becomes clear when the appropriation provided in the 1985/86 Estimates will be exhausted. Please allow sufficient lead time for the processing of the special warrant request.

Yours sincerely,

Hugh A. Curtis
Chairman

APPENDIX H-5

Province of British Columbia
OFFICE OF THE MINISTER

Ministry of Transportation and Highways

Parliament Buildings
Victoria
British Columbia
V8V 1X4

Minister's phone:
3180 or 387-3181
Executive Assistants:
387-6046 or 387-6709

DEC 17 1985

RECEIVED
DEC 17 1985
TREASURY BOARD STAFF
VICTORIA, B.C.

The Honourable Hugh A. Curtis
Chairman
Treasury Board
Parliament Buildings
Victoria, B.C.

Request: No. 21/86

Vote: 69 Highway Operations Department
74 Economic Renewal - Special
Highway Capital Construction Projects

Date: December 9, 1985

Amount: $118,800,000

Re: Special Warrants

REQUEST: Further to our T.B. submission 9/86, the Ministry is now requesting that Special Warrants be issued in the following amounts to cover unforseen expenditures not provided for in the Ministry's Estimates.

	Special Warrant Requirement
Vote 69 Highway Operations Department	
Highway Maintenance	-
Highway Capital Maintenance	20,300,000
Highway Capital Construction	25,400,000
	45,700,000
Vote 74 Economic Renewal	
Coquihalla Highway Construction	61,800,000
Fraser River Crossing (Annacis)	11,300,000
	73,100,000
	118,800,000

The reason for the increased spending in Highway Capital Maintenance is due to increased Day Labour Program, road construction and additional paving recap. A decrease in Highway Capital Construction spending is expected, as a number of projects will not generate the degree of expenditure originally planned.

The amount required for Coquihalla has increased $40 million due to the need to carry out extensive offsite works on the connecting highway links on Highways 1, 5 and 8, whereas the expected amount required for Fraser River Crossing (Annacis) has been reduced by $36.7 million as less work is expected to be completed by March 31, 1986 than was originally anticipated.

T.B. Request No. 21/86
Re: Special Warrants

JUSTIFICATION: The additional funding via Special Warrants is required to meet unforeseen major highway, road and bridge construction, including paving.

Minister of Transportation and Highways

Contact:
T.R. Johnson
Assistant Deputy Minister
Operations
Telephone: 387-3260

[redacted]/Approved

Chairman, Treasury Board

Dated: JAN. 8. 86.

cc: D.M. Hyndman
Deputy Secretary
Treasury Board

Province of
British Columbia

Ministry of
Finance

Parliament Buildings
Victoria
British Columbia

TREASURY BOARD STAFF

TREASURY BOARD BRIEFING NOTE

I. Prepared for circulation to the members of Treasury Board.

II. Ministry of Transportation and Highways
Request No. 21/86
Vote No. 69 and 74
Amount: $118.8 million Special Warrant
Subject: Additional highways spending.

III. Background:

On September 23, 1985, Treasury Board approved a supplementary highway capital construction program of $128.8 million. In the decision letter (copy attached), the Chairman recommended the ministry bring forward a request for a Special Warrant, later in the year, when it was clear the voted appropriation would be exhausted.

IV. Discussion:

The ministry has resubmitted the request to Treasury Board prior to seeking an Order in Council for a Special Warrant, as it wishes to allocate the additional spending in a slightly different way. This is summarized in the following table:

	Requested Allocations ($ millions)	
	Submission No. 9/86, Aug. 2/85	Submission No. 21/86, Dec. 9/85
Capital Maintenance	22.5	20.3
Capital Construction	36.3	25.4
Coquihalla	42.0	61.8
Annacis	28.0	11.3
TOTAL	128.8	118.8

From the above table it can be seen that in all categories, except the Coquihalla, Special Warrant spending has been reduced. However, the ministry plans to spend an additional $19.8 million of the Special Warrant on the Coquihalla which will bring total spending on this project for 1985/86 to $363 million, $82 million higher than the Blue Book figure. The ministry states that this increased spending is for extensive off-site works on the connecting highway links.

Reductions in proposed capital maintenance and capital construction spending has been achieved by slowing down projects while reductions in proposed spending on the Annacis system are due to lower than anticipated costs to completion.

The total amount of the Special Warrant has been reduced by $10 million to reflect half year savings from the transfer of the Ministry of Transportation and Highways salt water ferry fleet to the B.C. Ferry Corporation.

V. Options:

1. Do not approve the reallocation. The ministry would request a Special Warrant of $99 million based on not exceeding the allocations to individual projects/programs as approved by Treasury Board in September, 1985. Spending on the Coquihalla would have to be dramatically curtailed for the remainder of 1985/86 (by $19.8 million less than requested).

2. Approve the reallocation. The ministry will proceed with a request for a Special Warrant of $118.8 million.

VI. Recommendation:

Option 2.

December 20, 1985

APPENDIX H-6

Province of British Columbia
OFFICE OF THE MINISTER

Ministry of Transportation and Highways

Parliament Buildings
Victoria
British Columbia
V8V 1X4

Minister's phone:
1180 or 387-3181
Executive Assistants:
387-6046 or 387-6709

RECEIVED
JAN 21 1986
TREASURY BOARD STAFF
VICTORIA, B.C.

The Honourable Hugh A. Curtis
Chairman
Treasury Board
Parliament Buildings
Victoria, B.C.

Request: No. 21/86 A

Vote: 69 Highway Operations Department
Highway Capital Maintenance - Projects
Highway Capital Construction - Projects

Date: January 20, 1986

Amount: $118,800,000

Re: Special Warrants

REQUEST: Further to our T.B. submission 9/86, the Ministry is now requesting that Special Warrants be issued in the following amounts to cover unforeseen expenditures not provided for in the Ministry's Estimates.

	Special Warrant Requirement
Vote 69 Highway Operations Department	
Highway Maintenance	$ -
Highway Capital Maintenance	20,300,000
Highway Capital Construction	98,500,000
	$118,800,000

The reason for the increased spending in Highway Capital Maintenance is due to increased Day Labour Program, road construction and additional paving recap.

The amount required for Highway Capital Construction has increased to $98.5 million due to extensive projects involving upgrading Highways 1, 5, 8 and 16.

JUSTIFICATION: The additional funding via Special Warrants is required to meet unforeseen major highway, road and bridge construction, including paving.

Minister of Transportation and Highways

Contact:
T.R. Johnson
Deputy Minister
Telephone: 387-3280

[redacted]/Approved

Chairman, Treasury Board

cc D.M. Hyndman
Deputy Secretary
Treasury Board

Dated: JAN 23. 86.

APPENDIX H-7

FEB. 7 · 1986

Province of
British Columbia

MEMORANDUM

To: Honourable Hugh A. Curtis
Chairman
Treasury Board

January 21, 1986

From: David L. Emerson
Secretary
Treasury Board

Subject: Ministry of Transportation and Highways Request for Treasury Board Approval of a Special Warrant

Attached is a Treasury Board Submission which requests approval of a $118.8 million Special Warrant to supplement Vote 69, Highway Operations. This replaces a previous submission which split the request between Vote 69 and Vote 74, Economic Renewal.

The ministry will be using Vote 74 only for those items specifically related to the main Coquihalla Highway. All the remaining off-site projects will be charged to Vote 69.

There is considerable urgency to this request as the ministry's vote is nearly depleted. If you approve this request, Treasury Board Staff will endeavour to have the Order in Council and Special Warrant prepared for consideration as soon as possible.

David L. Emerson
Secretary

Attachment

APPENDIX H-8

Province of British Columbia — Ministry of Transportation and Highways

MEMORANDUM

To:
E. Carlson, Headquarters Accounts Payable
P. Stewart, Headquarters Pay Office
T. A. Jacklin, Contract Admin.,Leases & Agreements
D. Peterson, Voucher Examining

Date: January 29, 1986
Branch/Dist: Appropriations Office
Address: Financial Services Branch
940 Blanshard Street
Victoria
Phone: 387-3102
Hdqtrs. File: 70-00-00
Region File:
District File:

Re: Transfer of specific Coquihalla Highway "Offsite" Projects to Vote 69 - Highway Operations Department

Effective immediately, all costs associated with those projects appearing on the attached detailed listing are to be charged to Vote 69 - Highway Operations Department (not Vote 74). Use the following appropriate account number on all financial documents:

05101 Roads - Headquarters (Capital Construction)
05301 Bridges - Headquarters (Capital Construction)
05501 Paving - Headquarters (Capital Construction)

This means that all wages, expenses, invoices, progress estimates, etc. which have not been processed are now to be charged to Vote 69 - Highway Operations Department, Highway Capital Construction sub-vote.

S. E. Price,
Director of Financial Services

ARM/gvl

attachment

c.c.: R. G. White,
Assistant Deputy Minister
Highway Operations

M. G. Elston,
Executive Director,
Engineering Division

H. R. Zapf,
Director of Construction

L. C. Johnson,
Director of Bridge Engineering

O. Tisot,
Director of Paving

A. R. Moir,
Appropriations Officer

J. P. Stevenson,
Operations Manager

D. A. Jacobson,
Planning & Development Manager

H. W. Chamberlain,
Accounts Receivable
(b.c.c. Upon receipt of expenditure inquiries from Appropriations Office please journal voucher charges from Vote 74 to Vote 69.)

151.6-1

SUMMARY OF COQUIHALLA HIGHWAY "OFFSITE" PROJECTS TO BE TRANSFERRED TO VOTE 69 - HIGHWAY OPERATIONS DEPARTMENT

- B-2828 - Coquihalla Highway, Abbotsford-Hope Offsite Section, Hope Overpass and Thacker Creek Overpass
- B-2832 - Coquihalla Highway, Abbotsford-Hope Offsite Section, Alexander Creek Bridge
- B-2880 - Coquihalla Highway, Abbotsford-Hope Offsite Section, Silverhope Creek Bridge
- B-2886 - Coquihalla Highway, ~~Highway 8 Offsite Section~~, Phase 1 Carolin Bridge
- B-2899 - Coquihalla Highway, Highway 8 Offsite Section, Rattlesnake Bridge
- C-2662 - Coquihalla Highway, Abbotsford-Hope Offsite Section, Floods to Hope, construction
- C-2871 - Coquihalla Highway, Abbotsford-Hope Offsite Section, Hope to Nicolum Creek
- C-2872 - Coquihalla Highway, Abbotsford-Hope Offsite Section, Whatcom Interchange, grading
- C-2873 - Coquihalla Highway, Abbotsford-Hope Offsite Section, Popkum Interchange, grading
- C-2874 - Coquihalla Highway, Highway 5 Offsite Section, Highway 1 and 5A, Aberdeen Interchange, grading
- C-2906 - Coquihalla Highway, Abbotsford-Hope Offsite Section, Wahleach Power Station to Cheam View, grading and paving
- C-2907 - Coquihalla Highway, Abbotsford-Hope Offsite Section, Cheam View to Jones Creek, grading and paving
- C-3393 - Coquihalla Highway, ~~Highland Valley Offsite Section~~, Phase 2 Sussex Lake to Desmond Lake
- C-3394 - Coquihalla Highway, ~~Highland Valley Offsite Section~~, Phase 2 Desmond Lake to Meadow Creek Road

...../2

File No	Ministry
82w894	T+H

Contract Administration
Verification

	Initials	Date
Preparer		
Reviewer		

SUMMARY OF COQUIHALLA HIGHWAY "OFFSITE" PROJECTS TO BE TRANSFERRED TO VOTE 69 - HIGHWAY OPERATIONS DEPARTMENT

- Continued -

✓ S-2814 - Coquihalla Highway, Highway 5 Offsite Section, Highway 5, Merritt District boundary to junction Highway 1 in Kamloops

✓ S-2920 - Coquihalla Highway, Highland Valley Offsite Section, Meadow Creek Road, Logan Lake to Lac Le Jeune

✓ S-2921 - Coquihalla Highway, Highland Valley Offsite Section, Highland Valley Road, Bethlehem Mine access road to Logan Lake

S-2922 - Coquihalla Highway, Highland Valley Offsite Section, Highland Valley Road, Ashcroft to 26.3 km eastward

APPENDIX H-9

Documents referred to during debate by the Minister of Transportation and Highways. Tabled by Hon. J. A. Nelsen, Mi

Compiled: March 20, 1986

SUMMARY OF 1985/86 SPECIAL WARRANT PROJECT AUTHORIZATIONS
HIGHWAY CAPITAL CONSTRUCTION

Clerk Legislative Assembly
RECEIVED
MAR 26 1986
VICTORIA, B.C.

PROJECT NO. & DESCRIPTION	AUTHORIZATION $
B-0551 - Enderby Bridge over Shuswap River, Mabel Lake Road	6,000
B-0688 - Okanagan Lake Bridge, Okanagan Hwy.97,	100,000
B-0692 - Okanagan Lake Bridge, Kelowna	50,000
B-1821 - Agassiz-Rosedale Bridge, Hwy.9 expansion bearing replacement	52,000
B-2189 - Rosedale-Agassiz Bridge, replace worn bearings	200,000
B-2302 - Clayhurst Bridge, Clayhurst-Rolla Road	2,000,000
B-2387 - Coquitlam River Br., Mary Hill Bypass	1,700,000
B-2395 - Penticton Parkway Underpass, Hwy.97	7,000
B-2408 - Mary Hill Bypass Overhead, Cape Horn to Pitt River Highway	900,000
B-2409- Garibaldi Hwy.99, Alberta Creek Bridge	200,000
B-2787 - Silverhope Underpass & Floods Underpass	1,840,000
B-2788 - Six Mile Bridge, North Thompson Highway	20,000
B-2790 - Tomberry Road Bridge	240,000
B-2828 - Hope Overpass & Thacker Creek	2,600,000
B-2832 - Alexander Creek Bridge	6,200,000
B-2880 - Silverhope Creek Bridge	2,300,000
B-2898 - Curnow Bridge	900,000
B-2899 - Rattlesnake Bridge	1,500,000
B-2959 - Popkum Road Underpass	55,000
B-2963 - Lion's Gate Bridge, Highway 99	15,000
B-3040 - Highway 99, Westminster Hwy.Underpass	370,000

PROJECT NO. & DESCRIPTION	AUTHORIZATION $
B-3094 - Berkey Creek Bridge	300,000
B-3112 - Vedder Canal Bridge	700,000
B-3255 - Yellowhead Fraser River Crossing, Highway 16, Prince George	4,000,000
B-3339 - Lions Gate Bridge tower repair	226,000
B-3380 - Thomas Creek Bridge,Stewart-Cassiar Hwy.37	275,000
B-3381 - Beaverpond Creek Bridge,Stewart-Cassiar Highway 37	481,000
B-3382 - Spruce Creek Bridge, Stewart-Cassiar Hwy.37	255,000
B-3391 - George Massey Tunnel,Hwy.99 under Fraser River	500,000
B-3554 - Second Narrows Bridge,Taylor Way to Cassiar Street	35,000
B-3555 - Atwood Bridge, Atwood Road	600,000
B-3556 - Old Clayburn Road Underpass	570,000
B-3564 - Nicholson Bridge, Kettle Valley Road	15,000
B-3590 - Lion's Gate Bridge, Highway 99	120,000
B-3606 - Pacific Way Underpass, T.C.H.	50,000
B-3607 - T.C.H.1, Lonsdale Underpass	65,000
B-3611 - Okanagan Lake Bridge, Hwy.97	4,000
B-3644 - Sachts & Hammond Bridges, Sayward Road	50,000
B-3684 - Ralph River Bridge, Western Mines Access	200,000
C-1690 - Haney to Albion Junction,Lougheed Hwy.	10,000
C-1723 - Cassiar Hwy.37, Cranberry Crossing 1 to Derrick Creek	500,000
C-1725 - Fern Street to Mt.Seymour Parkway	9,000
C-1799 - Hwy.11, Mission Overhead Approaches	35,000
C-2431 - Okanagan Hwy.97, Gorman's Mill to I.R.9 including Westbank Couplet	150,000

PROJECT NO. & DESCRIPTION	AUTHORIZATION $
C-2662 - Floods to Hope	9,400,000
C-2819 - Okanagan Hwy.97, Bailey Rd. to Vernon, new construction and upgrading of existing Hwy.to 4 lanes	500,000
C-2823 - Hwy.5 Junction & Douglas Lake Road	25,000
C-2824 - Hwy.5 at Nicola Lake Rock Bluffs	225,000
C-2872 - Whatcom Interchange	2,253,000
C-2873 - Popkum Interchange	2,253,000
C-2874 - Highways 1 & 5A, Aberdeen Interchange	5,000,000
C-2905 - Highway 5, construct 2.5 km	453,000
C-2906 - Wahleach-Cheam View	10,300,000
C-2907 - Cheam View to Jones Creek	9,500,000
C-2911 - Highland Valley Road,Ashcroft,Barnard Creek & Suicide Corner	1,080,000
C-3016 - Hunter Creek Interchange	1,000,000
C-3027 - Garibaldi Hwy.99,Newman Creek Channelization bridge	3,000,000
C-3036 - Garibaldi Hwy.99, Lions Bay Interchange and Harvey Creek Channelization and Bridges	5,260,000
C-3123 - Hwy.15, Pacific Hwy.from U.S. Border to 32nd Avenue	1,292,000
C-3344 - Meadow Creek Road	125,000
C-1471 - Bottom Wood Lake Road, Winnfield	200,000
C-1633 - Corbin Road, Sparwood	125,000
C-1866 - Hwy.3A, Nelson-Balfour, Nelson	310,000
C-2011 - Nazko Road, Quesnel	200,000
C-2135 - John Hart Hwy.97, Bear Lake-Red Rocky Section, Prince George	450,000
C-3039 - Tachie Road, Ft.St.James	800,000

PROJECT NO. & DESCRIPTION	AUTHORIZATION $
C-3122 - Boston Bar Bridge Approaches, Boston Bar	270,000
C-3123 - Hwy.15, Pacific Hwy. from U.S. border to 32nd Avenue, Surrey	650,000
C-3132 - Hwy.97, 83 Mile House to 94 Mile House, 100 Mile House	2,900,000
C-3166 - Hwy.16 east, Slim Creek to Crescent Spu, Prince George	200,000
C-3392 - T.C.H.1 to United Way Connector, Coquitlam	1,600,000
C-3440 - Holberg Road, Smiths Road, Clarkson Road, Central Road, Port Hardy	375,000
C-3451 - Dunn Lake Road, Kamloops	200,000
C-3464 - Hwy.3 at Vermillion, Princeton	400,000
C-3484 - Hwy.16 & Old Lakelse Lake Road Intersection, Frontage Road, Terrace	200,000
C-3485 - Cassiar Acess Road, Quartz Rock Creek to Cassiar	300,000
C-3486 - Woodmere Loop, Fisher Road, Tyee Lake Road, Telkwa High Road, Smithers	300,000
C-3488 - Colleymount Road, Burns Lake	280,000
C-3495 - Easthom Road, Berry Point Road, Akenhead Road, Renfrew Road, Youbou Road, Duncan	200,000
C-3497 - Faye Road, Grafton Road, Rupert Road, Nuthatch Road, Bamfield Road, Port Alberni	200,000
C-3500 - Miscellaneous routes, Fort St.John area	1,300,000
C-3509 - Chilcotin-Bella Coola Hwy.20, Anahim Lake West	650,000
C-3511 - Blackwater Road, golf course to garbage dump slide, Quesnel	200,000
C-3513 - Yellowhead Hwy.16, Engen to Fraser Lake	100,000
C-3514 - Omineca Road, north of Misilinka, Ft.St.James	250,000
C-3532 - John Hart Hwy.97, Bear Lake to Red Rocky Section, Prince George	950,000

PROJECT NO. & DESCRIPTION	AUTHORIZATION $
C-3536 - George Massey Tunnel approach ramps, Vancouver	225,000
C-3571 - North Beatton River, slide repairs, Ft.St.John	825,000
C-3579 - George Massey Tunnel, crack sealing, Vancouver	233,800
C-3353 - Highway 37, Cousins Creek	450,000
C-3413 - Upper Nicola Indian Reserve	35,000
C-3414 - Construct bus pullouts	50,000
C-3432 - Okanagan Hwy.97, Westbank-North Bounday, I. R. 9	2,250,000
C-3433 - East Boundary Road & Lower Boucherie Road, Westbank-Kelowna	600,000
C-3450 - Douglas Lake Road	175,000
C-3534 - Construct cattle underpasses on Highway 5 north and Monck Park Road	100,000
C-3619 - Okanagan Hwy.97, Oyama to Bailey Road	500,000
C-3697 - T.C.H.1, Whatcom Interchange	500,000
C-4477 - S.T.P.H.3, Nicolum Creek to west boundary Manning Park	1,066,000
D-0006 - Arterial Hwy.Beautification,Community Participation Program	43,000
S-2814 - Highway 5, Merritt District Boundary-Junction Highway 1 in Kamloops	2,225,000
S-2815 - Highway 5, Upper Nicola-Peter Hope Lake Road	200,000
S-2920 - Meadow Creek Road, Logan Lake to Lac La Jeune	1,350,000
S-2921 - Highland Valley Road, Bethlehem Mine Access Road to Logan Lake	1,300,000
S-2922 - Highland Valley Road,Ashcroft to 26.3 km eastward	1,750,000
S-2977 - Hwy.3A, Trail-Glenmerry Hwy.22, Trail-Paterson, including Rossland curb and gutter	1,355,000
S-3258 - Scott Road, 64th, 72nd & 84th Avenue Intersections	300,000
S-3418 - 100 Mile House, miscellaneous roads	380,000

PROJECT NO. & DESCRIPTION	AUTHORIZATION $
S-3717 - Highway 17(Pat Bay Hwy.)McKenzie Ave. to Sayward Road	500,000
S-3721 - Saltspring Island & Galiano Islands	300,000
Miscellaneous Traffic Engineering Projects	1,000,000
TOTAL HIGHWAY CAPITAL CONSTRUCTION	98,500,000
C-3610 - Highway 16, Bowron River to Driscol Creek, Prince George	500,000
C-3612 - Highway 16, Vanderhoof to Engen	300,000
C-3613 - Apex Mountain Road, Penticton	345,000
C-3615 - Yellowhead Hwy.16,Prince George,Fraser River Bridge approaches, Prince George	1,450,000
C-3618 - Highway 2, Dawson Creek to Alberta Border, Dawson Creek	125,000
C-3637 - King George Hwy.99A,east & west of 128th St., Surrey	1,500,000
C-3674 - Garibaldi Hwy.99, Alberta Creek, Lions Bay	300,000
C-3675 - Garibaldi Hwy.99, Loggers Creek, Lions Bay	250,000
C-3676 - Barnett Highway, Vancouver	236,000
C-4170 - Duffey Lake Road, Lillooet	150,000
C-4181 - Miscellaneous School Bus & Feeder Routes, Prince George	250,000
TOTAL HIGHWAY CAPITAL MAINTENANCE	20,300,000

SUMMARY OF CAPITAL AND MAINTENANCE EXPENDITURES FOR ROADS, BRIDGES, FERRIES, LEGAL SURVEYS, RIGHTS-OF-WAY, PAVING, ETC.
FISCAL YEAR 1985-86
(FOR DETAILS SEE FOLLOWING SCHEDULES BY ELECTORAL DISTRICTS)

Electoral District	Vote 69 Capital Maintenance $	Vote 69 Capital Construction $	Vote 69 Hydro Development $	Vote 074 Economic Renewal Coquihalla $	Vote 074 Economic Renewal Fraser River $	Total Capital $	Maintenance $	Total $
Alberni	804,378.95	161,489.70	-	-	-	965,868.65	2,472,492.07	3,438,360.72
Atlin	1,500,002.70	1,434,717.14	-	-	-	2,934,719.84	7,932,170.15	10,866,889.99
Boundary-Similkameen	2,766,461.84	2,051,789.59	-	-	-	4,818,251.43	6,769,178.73	11,587,430.16
Burnaby-Edmonds	215,558.57	1,594,855.28	-	-	541,778.28	2,352,192.13	2,825,592.44	5,177,784.57
Burnaby North	91,558.23	75,158.68	-	-	-	166,716.91	274,748.05	441,464.96
Burnaby-Willingdon	377,756.37	118,397.92	-	-	332,318.20	828,472.49	301,592.80	1,130,065.29
Cariboo	20,347,459.30	1,786,013.59	-	-	-	22,133,472.89	17,687,003.50	39,820,476.39
Central Fraser Valley	151,487.37	4,193,995.26	-	143,002.95	-	4,488,485.58	1,030,989.53	5,519,475.11
Chilliwack	672,784.22	23,195,408.41	-	465,079.63	-	24,333,272.26	1,896,206.29	26,229,478.55
Columbia River	2,149,843.22	301,784.85	-	-	-	2,451,628.07	4,371,205.27	6,822,833.34
Comox	984,275.44	369,583.31	-	-	-	1,353,858.75	6,823,510.94	8,177,369.69
Coquitlam-Moody	317,279.41	5,813,669.11	-	-	-	6,130,948.52	444,402.24	6,575,350.76
Cowichan-Malahat	775,042.73	104,216.63	-	-	-	879,259.36	3,754,199.15	4,633,458.51
Delta	376,366.97	861,631.30	-	-	67,374,227.53	68,612,225.80	1,181,034.99	69,793,260.79
Dewdney	738,771.96	1,783,343.66	-	-	-	2,522,115.62	2,494,452.72	5,016,568.34
Esquimalt-Port Renfrew	696,132.46	405,509.04	-	-	-	1,101,641.50	2,622,387.01	3,724,028.51
Kamloops	6,791,785.69	8,405,883.36	-	4,470,053.87	-	19,667,722.92	9,007,840.31	28,675,563.23
Kootenay	2,347,322.32	695,385.36	-	-	-	3,042,707.68	4,538,933.69	7,581,641.37
Langley	494,833.09	179,508.05	-	-	-	674,341.14	1,687,888.92	2,362,230.06
Mackenzie	736,065.84	166,286.08	-	-	-	902,351.92	4,919,633.32	5,821,985.24
Maillardville-Coquitlam	1,447,355.13	110,530.32	-	-	-	1,557,885.45	298,211.39	1,856,096.84
Nanaimo	274,637.83	795,873.38	-	-	-	1,070,511.21	5,097,174.44	6,167,685.65
Nelson-Creston	2,813,527.12	589,139.62	-	-	-	3,402,666.74	13,365,787.19	16,768,453.93
New Westminster	317,683.55	819,382.62	-	-	62,153,180.86	63,290,247.03	74,033.48	63,364,280.51
North Island	2,599,184.19	383,782.06	-	-	-	2,982,966.25	6,537,599.11	9,520,565.36
North Peace River	5,715,944.33	1,285,574.58	-	-	-	7,001,518.91	7,156,262.07	14,157,780.98
North Vancouver-Capilano	121,019.94	923,379.62	-	-	-	1,044,399.56	501,651.77	1,546,051.33
North Vancouver-Seymour	115,278.17	474,634.91	-	-	-	589,913.08	317,172.18	907,085.26
Oak Bay-Gordon Head	-	-	-	-	-	-	3,086.16	3,086.16

SUMMARY OF CAPITAL AND MAINTENANCE EXPENDITURES FOR ROADS, BRIDGES, FERRIES, LEGAL SURVEYS, RIGHTS-OF-WAY, PAVING, ETC.
FISCAL YEAR 1985-86
(FOR DETAILS SEE FOLLOWING SCHEDULES BY ELECTORAL DISTRICTS) (continued)

Electoral District	Vote 69 Capital Maintenance $	Vote 69 Capital Construction $	Vote 69 Hydro Development $	Vote 074 Economic Renewal Coquihalla $	Vote 074 Economic Renewal Fraser River $	Total Capital $	Maintenance $	Total $
Okanagan North	1,646,625.75	7,397,983.86	-	-	-	9,044,609.61	5,813,494.48	14,858,104.09
Okanagan South	6,761,264.19	5,510,218.00	-	819,106.65	-	13,090,588.84	3,205,911.05	16,296,499.89
Omineca	3,958,450.27	448,524.56	-		-	4,406,974.83	10,197,344.00	14,604,318.83
Prince George North	2,742,481.67	1,953,052.56	-	-	-	4,695,534.23	5,130,267.01	9,825,801.24
Prince George South	4,220,381.76	4,798,719.86	-	-	-	9,019,101.62	8,063,987.47	17,083,089.09
Prince Rupert	686,720.62	220,073.67	-	-	-	906,794.29	1,830,866.87	2,737,661.16
Richmond	278,217.88	473,856.05	-	-	20,423,310.19	21,175,384.12	1,390,972.91	22,566,357.03
Rossland-Trail	4,089,069.53	406,287.51	-	-	-	4,495,357.04	3,444,791.94	7,940,148.98
Saanich and the Islands	707,998.25	351,782.37	-	-	-	1,059,780.62	2,835,902.13	3,895,682.75
Shuswap-Revelstoke	4,152,552.72	1,790,860.95	637,572.28	-	-	6,580,985.95	10,838,813.31	17,419,799.26
Skeena	4,902,520.02	986,436.20	-	-	-	5,888,956.22	7,946,454.99	13,835,411.21
South Peace River	5,401,922.62	6,887,452.46	-	-	-	12,289,375.08	8,216,672.83	20,506,047.91
Surrey	4,654,062.99	7,995,162.12	-	-	64,843.26	12,714,068.37	2,069,572.82	14,783,641.19
Vancouver Centre	-	521,930.98	-	-	-	521,930.98	441,818.28	963,749.26
Vancouver East	-	1,927.96	-	-	-	1,927.96	180,942.65	182,870.61
Vancouver-Point Grey	-	31,908.36	-	-	-	31,908.36	248,892.03	280,800.39
Vancouver South	-	-	-	-	-	-	102,540.51	102,540.51
West Vancouver-Howe Sound	1,565,945.67	13,643,269.36	-	-	-	15,209,215.03	4,087,535.88	19,296,750.91
Yale-Lillooet	8,885,045.13	58,809,352.36	-	265,347,731.63	-	333,042,129.12	13,433,487.55	346,475,616.67
Planning and Engineering Services, Headquarters	5,661,608.09	31,204,513.55	-	7,130,839.83	995,078.56	44,992,040.03	60,526,379.82	105,518,419.85
	117,054,664.10	202,514,236.17	637,572.28	278,375,814.56	151,884,736.88	750,467,023.99	266,393,088.44	1,016,860,112.43

APPENDIX H-11

COQUIHALLA

Project Number	Location and Description	Length (km)	Date Started	Date Completed	Percent Complete	Remarks
A. Abbotsford - Hope (Projects are listed West to East)						
C-2872	Trans-Canada Highway: Whatcom Interchange	7.87	Dec/85	—	20	A grading, bridge, and paving project for construction of an interchange at an existing tourist bureau just east of Abbotsford to replace several existing dangerous at-grade intersections.
C-2873	Trans-Canada Highway: Popkum Interchange	10.0	Dec/85	—	20	A grading, bridge and paving project to construct a new interchange a few kilometres east of the existing Rosedale interchange. Includes construction of a frontage road system as well as replacement of existing at-grade intersections.
C-2906	Trans-Canada Highway: Wahleach Power Station - Cheam View	4.9	Jan/85	—	90	Difficult grading and paving contract through Jones Hill area involving pipeline relocations, hydro lines, bridges, and careful construction along the C.N. Railway. Extensive rock slope stabilization has been required to construct the freeway at the toe of the mountains.
C-2907	Trans-Canada Highway: Cheam View - Jones Creek	9.7	Jan/85	—	80	Continuation of above. Also includes two large multiplates. Involves over 1,000,000 m^3 of excavation.
C-3016	Trans-Canada Highway: Hunter Creek Interchange	9.7	Jan/86	—	30	Grading, bridge, and paving project to construct an interchange just east of the Laidlaw Weigh Scales. Includes construction of an extensive frontage road system. Eliminates several at-grade intersections.
B. Hope - Merritt (Projects are listed South to North)						
C-2662	Floods - Hope	9.7	June/84	—	90	Grading and paving for realignment and four laning of the Trans-Canada Highway and Highway 3. Included is a major realignment of the C.N. Railway. Rail realignment after careful environmental review.
C-2944	Hope - Summit	-	Nov/84	—	50	Coquihalla Access Road was kept open the two previous winters to allow accelerated winter construction.
C-2871	Hope - Nicolum Creek	8.4	Jan/85	—	95	Difficult grading and paving contract for realigning and widening Highway 3 to four lanes. Two bridges and detours for stage construction are included.

COQUIHALLA (continued)

Project Number	Location and Description	Length (km)	Date Started	Date Completed	Percent Complete	Remarks
C-0760	Peers Creek - Ten Mile Creek	5.1	June/84	Nov/85	100	Grading along Coquihalla River. Construction through the narrow Coquihalla Valley necessitated a river diversion under strict environmental control. Also used are special high retaining walls known as reinforced earth to construct the highway between the river and mountains. Extensive rock stabilization was required for rock cuts up to 75 m (225 feet) high.
C-2663	Ten Mile Creek - Sowaqua	3.3	June/84	Nov/85	100	Similar construction to C-0760. Included are two major river diversions, reinforced earth retaining walls, and a debris torrent control structure. Extensive rock stabilization measures were required on the high rock cuts.
C-2683	Sowaqua - Ladner Creek	6.1	June/84	—	95	Grading along a wider section of the Coquihalla. Two river diversions were included. A massive earth slide of over 1,000,000 m^3 had to be controlled to complete the grading. Only minor cleanup remains.
C-2853	Ladner Creek - Shylock	2.7	Jan/85	—	95	Grading of the highway along mountain sidehill as the highway leaves the Coquihalla Valley and rises to the Boston Bar Creek Valley. Over 1,000,000 m^3 of excavation and two large reinforced earth walls on this short section. Only minor cleanup remains.
C-2782	Shylock Pit: Aggregate Crushing	-	Sept/84	Aug/85	100	Crushing and stockpiling over 1,250,000 tonnes of aggregate for neighbouring projects in the Ministry's biggest crushing contract ever. Also stockpiling of paving aggregate.
C-2854	Shylock - Portia	2.5	Jan/85	—	95	Continuing of mountain sidehill construction to Boston Bar Creek Valley. A major pipeline relocation as well as high retaining walls are necessary to construct the highway on the sidehill. Avalanche control works are being constructed to protect the highway. Construction has been impeded by difficult soil excavation and water problems, but this large, complex project has the grade completed for paving.

COQUIHALLA (continued)

Project Number	Location and Description	Length (km)	Date Started	Date Completed	Percent Complete	Remarks
C-2810	Portia - Miranda	3.0	Sept/84	Nov/85	100	First grading contract proceeding up Boston Bar Creek Valley. To construct a highway in the narrow and steep sided mountain valley it was necessary to relocate an existing pipeline and divert Boston Bar Creek several times. Due to poor soils the grade is built mostly of borrow and shot rock. Included are avalanche control works and two precast concrete culverts.
C-2810 -0001	Portia - Box Canyon	-	Jan/85	June/85	100	Precast supply of a new uniquely engineered concrete culvert.
C-2811	Miranda - Box Canyon	3.7	Sept/84	--	95	Continuation of C-2810 up Boston Bar Creek and similar construction. Over 1,300,000 m^3 of excavation over this short section. Includes a precast concrete culvert. Mostly borrow excavation for grade. Only minor cleanup remains to be done.
C-2812	Box Canyon - Great Bear No. 5	3.3	Sept/84	—	95	Next in the Boston Bar Creek Valley projects. A massive, difficult project of over 2,000,000 m^3 of excavation. A debris torrent channel was built on Ottomite Creek. The channels had to be constructed on the steep mountain slope, a very difficult project. Two major multiplates were also constructed. Only minor cleanup remains to be done.
C-2813	Great Bear No. 5 - Summit	4.9	Sept/84	—	95	Last project up Boston Bar Creek Valley. Soils are so poor in the summit area that almost all fills are made from rock quarries. Over 750,000 m^3 of rock excavation was required for fill construction. Two major multiplate structures were completed as well.
C-3060	Summit Quarry: Quarrying and Crushing	-	June/85	Sept/85	100	Due to the poor soils and lack of gravel in the summit area, granular aggregates were produced by quarrying rock.
C-2896	Provide Power to Coquihalla Lakes and Great Bear Snow Shed	-	Sept/84	—	90	Extending power up the Coquihalla Valley to provide power to interchanges, maintenance camp, Toll Booth Plaza, and Great Bear Snow Shed.
C-3383	Summit - Merritt	-	Dec/84	—	50	Keeping access road open during the winters to allow winter construction.

COQUIHALLA (continued)

Project Number	Location and Description	Length (km)	Date Started	Date Completed	Percent Complete	Remarks
C-0579	Dry Gulch - Mine Creek	9.3	June/83	Aug/85	100	A large excavation project mostly completed last year. Minor cleanup completed. Marks the highway's descent from the Summit along the Coldwater River to Merritt.
C-2781	Coldwater Pit: Aggregate Crushing	-	Aug/84	July/85	100	Paving aggregate crushing and stockpiling.
C-2694	Mine Creek - Juliet	6.0	Aug/84	—	95	Continuation of Project C-0579 down the Coldwater Valley. As with the Coquihalla River, the Coldwater River was diverted successfully under strict environmental controls. Included was a difficult rock excavation on the canyon walls of Dry Gulch for Dry Gulch Bridge. A major pipeline relocation was also required. The Toll Booth grading was completed. Only minor works remain.
C-2825	Juliet to Coldwater Crossing No. 3	6.6	Aug/84	Nov/85	100	Next grading project down the Coldwater Valley to Merritt. Mostly a borrow project with six pipeline relocations. Included were six bridge approach fills and a major diversion constructed on the Coldwater River under tight environmental control.
C-2852	Coldwater Crossing No. 3 - Larson Hill	8.8	Jan/85	—	95	A major grading project of over 2,000,000 m^3 of excavation, including over 750,000 m^3 of rock. A novel feature is the inclusion of a salmon rearing pond. Construction includes a large interchange, extensive rock stabilization, and the two highest reinforced earth walls on the Coquihalla. Only minor works remain.
C-2827	Brodie Pit: Aggregate Crushing	-	Aug/84	Aug/85	100	A major aggregate crushing and stockpiling project for neighbouring projects, over 1,000,000 tonnes produced.
C-2831	Larson Hill - Coldwater Crossing No. 6	4.3	Jan/85	—	95	A major grading project involving over 1,000,000 m^3 of excavation including 400,000 m^3 of rock excavation. Three pipeline relocations were required. Only minor works remain.
C-2834	Coldwater Crossing No. 6 - Hydro Crossing	6.4	Jan/85	—	95	The highway crosses the Coldwater River to the eastern slope of the Coldwater Valley for the remainder of the route to Merritt. A major grading project involving 1,300,000 m^3 of excavation of which 600,000 m^3 was rock. Included are three pipeline crossing, two major multiplates, and extensive rock stabilization. Only minor works remain.

COQUIHALLA (continued)

Project Number	Location and Description	Length (km)	Date Started	Date Completed	Percent Complete	Remarks
C-2844	Hydro Crossing - Compressor Station	2.9	Nov/84	Sept/85	100	Continuation of highway grading along the eastern slope of the Coldwater Valley. A moderate earthworks project.
C-2843	Compressor Station - Salem Creek	2.8	Nov/84	Sept/85	100	A small earthworks grading project being a continuation of the previous project.
C-2840	Salem Creek - Glenwalker	4.7	Jan/85	Sept/85	100	A moderate grading project of about 750,000 m^3 of excavation, including over 300,000 m^3 of rock.
C-2841	Glenwalker - Kwinshatin Creek	3.5	Nov/84	Sept/85	100	A moderate earthworks project continuing towards Merritt.
C-2839	Kwinshatin Creek - Trans Mountain Pipeline	6.3	Jan/85	Nov/85	100	A major grading project of over 1,500,000 m^3 of excavation. Installation of two huge multiplate structures for vehicular underpasses were major construction features.
C-2837	Trans Mountain Pipeline - Highway No. 5A Interchange	3.2	Nov/84	Oct/85	100	A medium earthworks project completes the Coquihalla Highway along the Coldwater Valley. At the end of the project the highway enters the Nicola Valley. Installation of a large multiplate structure for a vehicular underpass was a major feature.
C-2838	Merritt Bypass	5.0	Oct/84	—	95	The Coquihalla Highway leaves the Coldwater Valley to cross the Nicola Valley just to the east of Merritt. Three bridges and three major multiplate structures were the major construction features.
C-2816	Godey Pit: Aggregate Crushing	-	Sept/84	Apr/85	100	Crushing and stockpiling over 750,000 tonnes of aggregate for neighbouring projects. Also crushing and stockpiling paving aggregates.
C. Hope - Merritt: General						
C-2917	Avalanche Works	-	Apr/84	—	85	A two year program of avalanche engineering for highway design, construction and future highway operation.
C-2889	Guardrail Purchase	-	Nov/84	—	80	Advance manufacturing and stockpiling of 175 km of guardrail for rapid placement after paving.
C-3086	Installation of Telephone Facilities	-	May/85	—	75	Extending telephone facilities from Kingsvale to the Toll Booth on the north end and from Hope to Shylock on the south end.

COQUIHALLA (continued)

Project Number	Location and Description	Length (km)	Date Started	Date Completed	Percent Complete	Remarks
C-3064	Post Construction Environmental Monitoring	-	May/85	—	20	A program of environmental field studies to determine the success of river diversion works and of habitat mitigation construction after several years following construction completion.
D. Merritt - Kamloops (Projects are listed South to North)						
C-2891	Merritt - Shuta Creek	8.9	Jan/85	—	75	A large earthworks project following the Nicola Valley north to the confluence of the Nicola and Clapperton Valleys. Included are two major multiplate structures.
C-2878	Tote Road: Shuta Creek-Surrey Lakes	-	Sept/84	—	75	A tote road was constructed up the Clapperton Valley to Surrey Lake to allow access for engineering crews and contractors.
C-3354	Shuta Creek - Kirby Creek	5.5	Nov/85	—	5	After following the Nicola Valley the highway turns north and follows the Clapperton Valley to the summit of the Surrey Lakes. An extremely large project of over 3,00,000 m^3 of excavation. Included is construction of Grimshire Road Overpass bridge. Environmental controls are being applied to all grading construction from Merritt to Kamloops even though no major river works are included.
C-3071	Kirby Pit Crushing	-	Nov/85	—	50	Crushing and stockpiling of granular base and paving aggregates for neighbouring grading projects and future paving projects.
C-3355	Kirby Creek - km 16.9	2.33	Dec/85	—	15	A continuation of C-3354 up the Clapperton Valley. A major excavation project of over 1,000,000 m^3 of excavation including 500,000 m^3 of rock. Extensive rock stabilization techniques will have to be used on the rock cuts to allow highway construction in the narrow valley.
C-3356	km 16.9 - Clapperton Canyon	3.8	Nov/85	—	5	Continuation of C-3355 up the Clapperton Valley. Similar to C-3355 in size and type of project.
C-3527	Clapperton Canyon - Sussex	-	Oct/85	Feb/86	100	Clearing and Grubbing.

COQUIHALLA (continued)

Project Number	Location and Description	Length (km)	Date Started	Date Completed	Percent Complete	Remarks
C-3357	Clapperton Canyon - Helmer Lake	6.2	Dec/85	—	5	Final contract up the Clapperton Valley. A large excavation of over 1,500,000 m^3 mostly earthworks. A massive concrete box culvert is being built at the Clapperton Creek Crossing to allow fish passage. A large multiplate structure is also included.
C-3074	Clark Creek Pit Crushing	-	Oct/84	—	35	Granular base aggregate crushing and stockpiling for neighbouring projects.
C-3358	Helmer Lake - Sussex Lake	5.5	Dec/85	—	5	After climbing to 4600 feet up the Clapperton Valley from the Nicola lowlands the highway follows through the Surrey Lakes and Meadow Creek-Fraser Plateau area before the long descent to Kamloops. A large excavation project of over 1,000,000 m^3. Another box culvert is constructed for the second crossing of Clapperton Creek.
C-3528	Sussex Lake - Meadow Creek Road	-	Oct/85	Dec/85	100	Clearing and grubbing.
C-3393	Sussex Lake - Desmond Lake	7.3	Dec/85	—	10	Continuation of the freeway towards Merritt along the Upper Fraser Plateau. A medium excavation project of 700,000 m^3. A major multiplate structure is included.
C-3394	Desmond Lake - Meadow Creek Road	5.0	Dec/85	—	10	A medium excavation project with several large multiplate structures for creek crossings. Tight environmental controls will be applied to all multiplate construction in the creeks to preserve habitat.
C-3075	Section 29 Pit Crushing	-	Oct/85	—	35	Crushing base course aggregate for neighbouring projects.
C-3529	Meadow Creek Road - Stake Lake	-	Oct/85	Feb/85	100	Clearing and grubbing.
C-3076	Walloper Pit Crushing	-	Oct/85	—	60	A major crushing project of over 1,000,000 tonnes. Producing base course aggregate and paving aggregate for grading and future paving projects.
C-3395	Meadow Creek Road - Stake Lake	6.5	Feb/86	—	5	A major day labour project to grade and gravel this freeway section. Over 1,000,000 m^3 of excavation. The only interchange between the existing Trans-Canada Highway and Merritt is a major feature of the construction.

COQUIHALLA (continued)

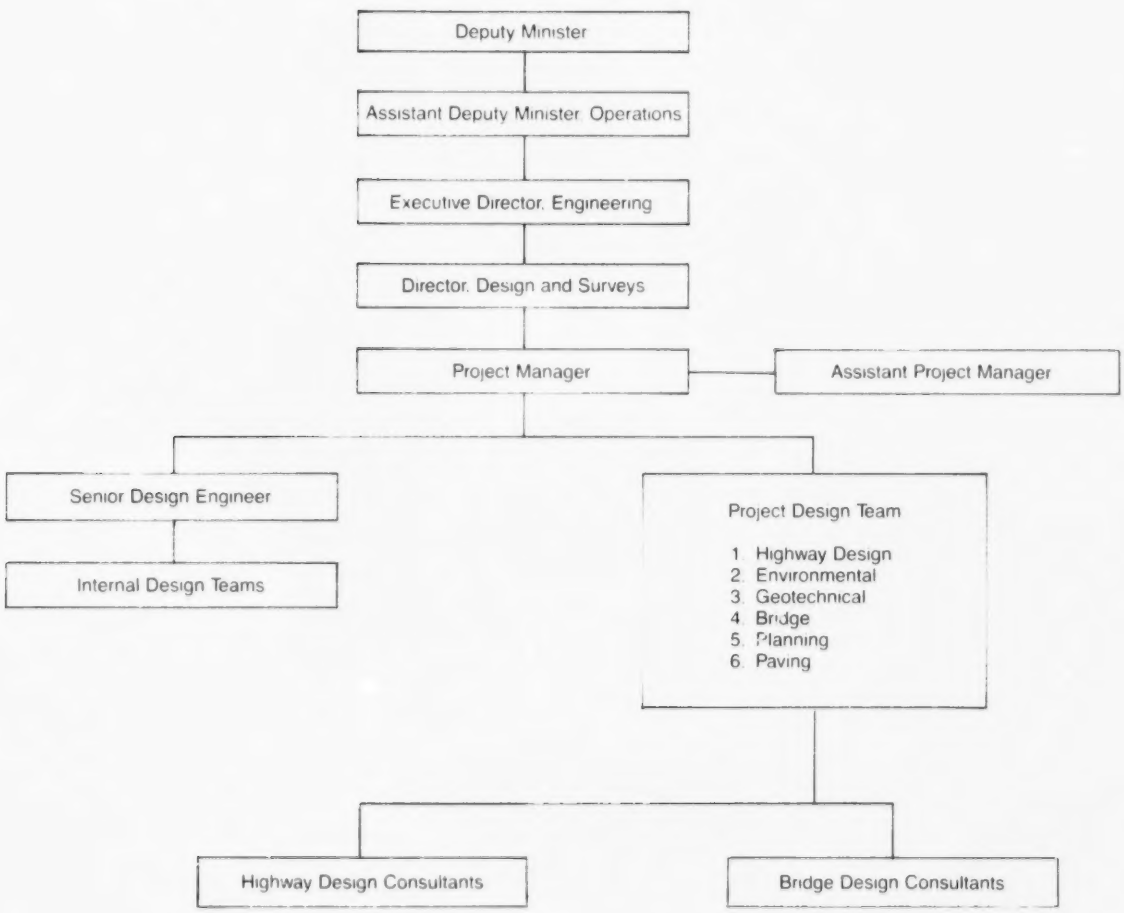
Project Number	Location and Description	Length (km)	Date Started	Date Completed	Percent Complete	Remarks
C-3530	Stake Lake - Sugarloaf	-	Oct/85	Feb/85	100	Clearing and grubbing.
C-3416	Stake Lake - Peterson Creek	8.1	Jan/86	—	5	This project marks the freeway's descent from the Upper Fraser Plateau at 4500 feet to Kamloops at 1,000 feet elevation. Generally, the freeway is six lanes wide on the section from Stake Lake to Kamloops. A major excavation project of over 1,500,000 m^3. Included are two major multiplate structures for vehicular underpasses.
C-3417	Peterson Creek - Rush Lake	4.8	Jan/86	—	5	A major excavation project of over 1,000,000 m^3 of excavation including 250,000 m^3 of rock. A major multiplate for a vehicle underpass is included. Special attention is being given to constructing the highway over an existing water storage dam at Jocko Creek.
C-3396	Timber Lake Pit Crushing	-	Dec/85	—	25	A medium sized crushing project for producing and stockpiling base course and paving aggregate for grading and future grading projects.
C-3358	Rush Lake - Moose Lake	5.5	Feb/86	—	5	A major excavation project of over 1,000,000 m^3 continuing the grading towards Kamloops.
C-3359	Moose Lake - Highway 1	5.0	Feb/86	—	5	Last section of new freeway. Further sections will follow the existing Highway 1 alignment through Kamloops. An extremely large project with reinforced earth retaining walls, two bridges, a rest area, and the major interchange with the existing Highway 1.
C-3581	Afton - Old Ski Hill	3.8	Mar/86	—	0	The Coquihalla Freeway generally follows the existing Highway 1. The existing highway is being reconstructed to six-lane freeway standard. A complex project requiring major utility relocations and drainage systems before grade construction proceeds. An interchange and bridge at Copperhead Way is a major construction feature. Grading, gravelling, paving and electrical construction is all included. Just tendered at year-end.

COQUIHALLA (continued)

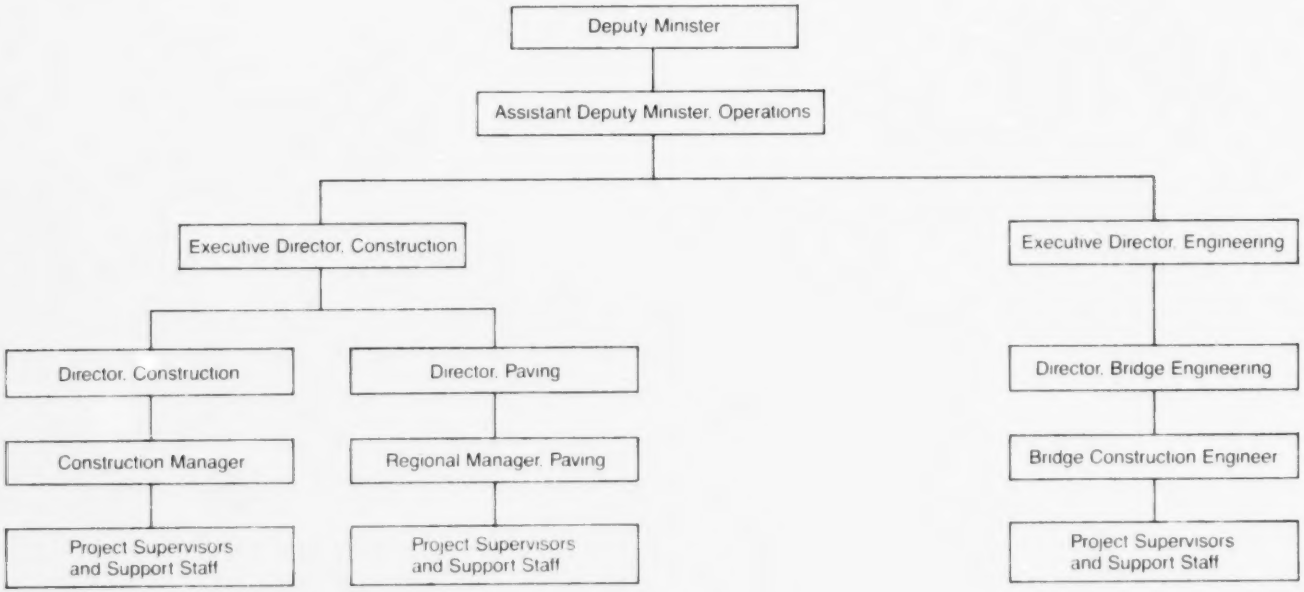
Project Number	Location and Description	Length (km)	Date Started	Date Completed	Percent Complete	Remarks
C-3582	Old Ski Hill - Columbia Street	3.0	Mar/86	—	0	Continuation of reconstruction of the existing Trans-Canada Highway to a six-lane freeway through Kamloops. A complex project involving utility relocations, a major drainage system, a bridge and interchange at Pacific Way. This project marks the end of the Coquihalla Freeway. Just tendered at year-end.
C-2874	Kamloops Aberdeen Interchange: Highway No. 1 and Highway No. 5A	3.7	Feb/85	—	85	Interchange construction to handle Coquihalla traffic in 1986. A difficult project in a congested area as it includes many utility relocations. Included is grading, electrical, bridge, and paving. To be completed in May 1986. The interchange will form part of the final Coquihalla Freeway.
E. Merritt - Peachland						
C-3736	Gorman Mill - Coutlis Creek	3.5	Mar/86	--	0	Four laning of Highway 97 and interchange construction of Highway 97 to the Merritt-Peachland Connector. Just tenuered at year-end.

APPENDIX H-12

Coquihalla Highway Design Organization Chart



Coquihalla Construction Organization Chart



APPENDIX H-14

HANSARD

very carefully before he tells me that there is no communication by letter between his ministry and the Treasury Board concerning the need for additional moneys to complete the Hope to Kamloops — in effect — portion of this project.

Mr. Chairman, let me be more specific. Would the minister deny that Treasury Board has given conditional approval for an expenditure somewhat over $100 million beyond the original estimate for this project?

HON. A. FRASER: To the section of road from Hope to Merritt and Merritt to Kamloops? No, I don't think that's correct. It might be for other highway expenditure, but not on this section. The figures we have there I believe to be correct, which we've dealt with here, for this section.

MR. GABELMANN: So the minister is saying that the letter that I am referring to, the approval that I am referring to — if it exists, he would say . . . . I'm saying that he should tell us whether it does or doesn't. But he's saying that if it exists, it exists for some other purpose, some other activity of the Transportation and Highways ministry, that it may be for some other road construction. Is it for operating? Is it that you are taking money from other sections of the ministry in order to pay for the overruns that are involved in this so that you can keep this particular budget apparently within line? Just what kind of juggling is going on? What is that approval related to specifically?

HON. A. FRASER: It could well be if the letter exists for additional funds, I think that your question under special warrant in this fiscal year . . . . It could be for projects we've done other than Hope to Merritt, Merritt to Kamloops, in the highways system generally.

MR. GABELMANN: Under section 3 the government may borrow up to $375 million for this project. Is the minister prepared to provide the House, one way or another, or to provide to the opposition, the precise numbers of dollars expended, contract by contract, to date on the Coquihalla? Are all of those contracts and the dollar amounts, both dollar amounts in the original contract and the excesses to those amounts where they exist . . . . Is the minister prepared to give us, one by one, a list of those dollars that have been contracted for, and also a list including those dollars that have gone beyond the original contracts, so that we can see whether it is $250 million or $260 million?

HON. A. FRASER: Work is still going on. I guess we have figures probably up to the end of October, as an example, of contracts completed, contracts awarded and contracts not completed.

MR. GABELMANN: Mr. Chairman, then if the figures are available up to the end of October and clearly some of those contracts are still not completed — many are completed — much of the work is completed and therefore there should be an ability to give to us a list of the contracts, and beside each contract the dollar amount of the contract and the amount extra if such an extra amount was involved, up to the end of October. It may well be that on some of the latter contracts we won't be able to know what the extras are, but we'll at least know what the contract figure is. Can the minister provide us with a list of those figures so that we can properly debate this section?

HON. A. FRASER: I suppose the figures are available, but I say we can't give the figures if the work is still in progress, as an example on about 15 bridges; I don't know how many millions the total amounts to. The bridges are supposed to be finished, as an example, by the end of November or in December, and of course we haven't got that figure. But we have the original contracts that were awarded — the figures.

MR. GABELMANN: Then, Mr. Chairman, may I ask him to give us the list of the contracts that have been awarded and the amounts in each case of the contract, and while he's doing that, to give us, in those contracts that have been completed and all of the financial dealings with the particular contractor that have been completed, the extras that have been paid on those particular contracts. I'm not concerned about the ones that are still continuing. Obviously we don't know yet. We know what the contract figure is. So can't we have the contract figure and those other figures that relate to the completed contracts where there have been moneys expended beyond the contract amount? Can we have that before we proceed?

HON. A. FRASER: I would assume the ministry's got those figures up to the end of October.

COQUIHALLA HIGHWAY CONSTRUCTION ACCELERATION ACT
(continued)

The House in committee on Bill 2; Mr. Ree in the chair.

MR. CHAIRMAN: Sections 1 and 2 have previously passed.

On section 3.

MR. GABELMANN: I have a few questions for the minister. My first question is: does he anticipate that $375 million will be sufficient to complete construction from Hope to Kamloops?

HON. A. FRASER: That's the anticipation, yes.

MR. GABELMANN: Mr. Chairman, may I ask the minister whether or not his ministry has made communications with either or both the Treasury Board and the Minister of Finance with respect to securing approval for additional expenditures beyond those anticipated before later this year?

MR. CHAIRMAN: Yes.
The member was asking the Chair a question.

MR. GABELMANN: Mr. Chairman, thank you for the answer. Now may I direct that question to the minister.

MR. CHAIRMAN: Yes.

HON. A. FRASER: Would you repeat the question?

MR. GABELMANN: Has the ministry, or the minister, made any communications with the Treasury Board and/or the Minister or Ministry of Finance with respect to securing approval for anticipated expenditures beyond those already allocated by either this Legislature or Treasury Board?

HON. A. FRASER: Mr. Chairman, if I understand the question, you're referring to phase 1 and phase 2. We haven't made any additional requests to them. First of all, I believe $281 million was provided for in the current budget, in relation to phase 1 and phase 2. We don't anticipate that it will require more, if that answers your question, in the fiscal year 1985-86.

MR. GABELMANN: Mr. Chairman, if I understood the minister correctly just now, he said that he anticipates that the budget required for phase 1 and 2 in 1985-86 is $281 million — if I heard correctly — and he confirms that, Mr. Chairman.

He said in the Legislature yesterday that $250 million to $260 million has already been spent on the Hope-Merritt section, and another $7 million on the Merritt to Kamloops section in preliminary work, bringing the total to somewhere between $257 million and $267 million already spent. The budget in 1985-86, according to the minister a moment ago, is $281 million. Taking the lower figure, if my quick arithmetic is correct, we're looking at $24 million remaining in this fiscal year that's been budgeted for the continued construction between now and March 31. Am I correct?

HON. A. FRASER: That's either spent or committed. In other words, we award a contract and if the contractor hasn't completed, it mightn't be actually spent but it's been either spent or committed by contract.

[4:15]

MR. GABELMANN: I want to go through this slowly, just so we don't get off track. Am I to understand from the minister's answer that the $250 million to $260 million plus the $7 million that he talked about yesterday in the House may not yet have been spent, but may include money that is committed in contracts that are now let? Is that my understanding?

HON. A. FRASER: Yes, I think you are correct there, sir; the money mightn't be spent but it is committed by a legal contract with various contractors, and of course they are at work.

MR. GABELMANN: Let me go back, then, to the question that I didn't pursue earlier: that is, had any discussions been held between the Ministry of Transportation and Highways and Treasury Board, or the Ministry of Finance, with respect to the need to secure at a later date, by special warrant, some additional moneys, over $100 million worth, in order to complete this phase, the Hope to Merritt phase, of the Coquihalla Highway? Have any discussions been held between his ministry and the Ministry of Finance or Treasury Board?

HON. A. FRASER: Well, there could well have been. I'm not aware that . . . . We're getting a little confused here now, because we're dealing with Treasury Board at the present time on matters for the new fiscal year, but in this particular phase the figures that we're given here seem to be that we'll be able to fall in line on this section of highway from Hope to Merritt and Merritt to Kamloops.

MR. GABELMANN: I don't have the pleasure of being confused by the 1986-87 figures. I want the minister to think